THE EFFECTS OF PATERNAL LOSS ON CHILD'S EDUCATIONAL LIFE AND INTERGENERATIONAL TRANSMISSION OF EDUCATION FOR GIRLS

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Approval of the Graduate School of Social Sciences

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ABSTRACT

THE EFFECTS OF PATERNAL LOSS ON CHILD'S EDUCATIONAL LIFE AND INTERGENERATIONAL TRANSMISSION OF EDUCATION FOR GIRLS

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This study examines the effects of father's death on child's educational life in Turkey and attempts to reveal whether or not death faced in school age time is more detrimental than death faced in pre-school ages by using the Demographic and Health Survey (DHS, 2013). The results show that for boys, father's death can decrease the 8^{th} grade completion rate by 5.5 percentage points. The ratio increases to 28 percentage points for the 12^{th} grade completion rate. The same signifcant effcet is observed for boys. In addition, there is not any meaningful effect of father's death on leaving home decision. In the second part of this thesis, the intergenerational educational mobility in Turkey across the three female generations is examined. The results show that educational inequality coming from the channel of parents' education has diminished over time. The results are promising since the effect of fathers' education which proxies for higher income in the family has diminished over time. The same thing is valid for the 5^{th} and 8^{th} grade, but, in the 12^{th} grade completion rate, mothers' education becomes more effective in the second generation than the first generation. Hence, we can conclude that girls should be motivated by

mothers in order to obtain higher degrees. In this context, special social policies for orphans and policies which aim at decreasing inequality of opportunity for girls should be designed.

Keywords: Education, Father's Death, Intergenerational Transmission of Education for Girls, Turkey

ÖZ

BABA KAYBININ ÇOÇUĞUN EĞİTİM HAYATINA ETKİSİ VE KIZ ÇOCUKLARI İÇİN EĞİTİMİN NESİLLER ARASI AKTARIMI

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Bu çalışmada, Türkiye'de baba ölümünün çocuk eğitimi üzerine etkisi ve hangi yaşta yaşanılan baba ölümünün eğitimi daha çok etkilediği araştırılmıştır. Çalışmada, Hacettepe Nüfus ve Sağlık Anket verilerini (2013) kullanarak analizler yapılmıştır. Sonuçlar, erkek çocuklar için babanın ölümünün, 8. sınıfa tamamlanma oranına yüzde 5.5 puan düşürülebileceğini gösteriyor. Bu oran 12. sınıf tamamlama oranı için yüzde 28 puana yükselmektedir. Aynı önemli etkileri kentte yaşayan erkek çocuklar için de gözlemlemekteyiz. Buna ek olarak, evden ayrılma konusunda baba ölümünün anlamlı bir etkisi yoktur. Bu tezin ikinci bölümünde Türkiye'de kuşaklar arası eğitim hareketliliği incelenmiştir. Sonuçlar, eğitimde yaşanan eşitsizlikte, ebeveynlerin eğitiminin etkisinin zamanla azaldığını göstermektedir. Sonuçlar, genelde aile gelirini temsil eden baba eğitimin etkisinin azaldığı yönünde olduğu için, eğitimde fırsat eşitsizliğinin azaldığına dair umut vericidir. Aynı şey annenin eğitimi için 5. ve 8. sınıflarda da geçerli olup 12. sınıf tamamlama oranında, annelerin eğitiminin ikinci kuşakta ilk kuşaktan daha etkili olduğu görülmüştür. Dolayısıyla, kızların ileri eğitim derecelerinden mezun olabilmesi için anneleri tarafından motive edilmesi gerektiği anlaşılmıştır. Bu bağlamda, babası ölmüş çocuklar için özel sosyal

politikalar ile kız çocukları için eğitimde fırsat eşitliğini arttırmaya yönelik politikalar, eğitim çıktılarının iyileşmesine katkıda bulunacaktır.

Anahtar Kelimeler: Eğitim, Baba Ölümü, Kız Çocuklarında Nesiller Arası Eğitim Aktarımı, Türkiye

To my family

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CHAPTER 1

INTRODUCTION

In this thesis, we investigate two topics; first, the effects of father's death is analyzed and then, the intergenerational transmission of education for girls in Turkey is discussed. Death of parents can be seen as a very traumatic incident, especially for children in school ages. Losing a parent or both parents may have detrimental effects on a child's education, health, and psychology. Human capital investment in a child may diminish because of parental loss, since parents are the source of mental and socio-emotional development (Dynarski, 2003). In general, fathers play an important role in family because they are the main breadwinners, especially in patriarchal societies. In Turkey, men are generally the main source of income and often decision makers in terms of financial matters within a family. Therefore, paternal orphan-hood may have more serious consequences than maternal orphan-hood.

According to the 2013 wave of the Demographic and Health Survey, 2% of children aged 6-24 are paternal orphans in Turkey. When we analyzed the data set, we found that the 8^{th} grade completion rate is lower for orphans, which is 89%, as compared to non-orphans for whom we observe an average completion rate of 93%. The 12^{th} grade completion rate drops both for children who have and have not lost their fathers, but the significant difference continues to exist. The 12^{th} grade completion rate is estimated at 32% for orphans, but at 42% for non-orphans. Within the light of this fact, paternal orphans are observed to lag behind in terms of educational outcomes in Turkey. This might be caused by differences in intelligence and characteristics of children like passion or directly form the detrimental effects of father's loss. All of these can be a reason for the education difference, but we look for whether orphans' educational lives would be different if they had not lost their fathers by controlling unobserved and time invariant variables as much as possible in our model. Therefore, our main motivation and aim is to show the effects of father's

death on schooling outcomes by controlling for all possible observed characteristics such as parents' educations. Although we include time invariant variables as much as possible, the relationship between orphan-hood and educational outcomes may not represent true causality. In other words, the linkage may come from some unobservable factors, not solely from paternal death to education. In this context, understanding all mechanisms of the effect of the loss of father on education is necessary to get a proper interpretation of the thesis' results.

The income shock to a family caused by father's death may set limitations on some expenditure such as education, health, and entertainment. Certain mechanisms may reduce the impact of father's death and loss of income on child's wellbeing. For instance, there are some researches which found that mothers are able to spend money on children's expenditure wisely after income shocks (Feather, 1991; Kennedy, 2008). This indicates that children can continue their educational and social lives if their mothers allocate limited family income efficiently.

Other mechanisms include labor supply adjustment, which means mothers, children and other family members who do not have any work experience start to join labor force. For instance, a mother who had not worked before the death of her spouse and older children may take on the responsibilities of the father as a bread earner. Sharma (2006) pointed out that children's future lives are affected by a rearrangement in labor allocation. Since children are expected to work rather than go to school in order to meet the family needs, their human capital construction is disrupted. The long-lasting and detrimental effects of insufficient education can be seen in all stages of children's future lives, such as labor market outcomes, marriage and family life. The second way of adapting to income shock caused by father's death is expenditure adjustment which means the family income is reallocated among consumption choices. A third way of adjustment mechanism is transfers from public and private sectors, like donations from charity organizations. Families can sustain their previous standard of living with these kinds of aids. Besides from this financial disruption, adverse emotional effects of a loss of a father can lead to discouragements in areas like education, business network, and social capital. Also, putting themselves into

fathers' places isolates children from their normal environment (Stokes, Reid, and Cook, 2009).

Regarding the importance of analyzing the effects of paternal death on child's educational outcomes, the questions of this study can be summarized as follows:

- Is there a link between paternal death and poor school outcomes of children?
- Is there any difference in the 5^{th} grade, 8^{th} grade, and 12^{th} grade completion rates between orphans and non-orphans?
- Is there any difference in the school dropout rates between orphans and non-orphans?
- At which age groups does paternal loss affect the school outcomes the most?
- Is there a link between paternal death and the decision for leaving the house among children?

As noted earlier, our primary aim is to analyze whether there is significant evidence of impacts of father's death on children's educational outcomes such as grade completion and dropout rates. In this light, we try to answer the first question by looking at impacts of father's death on the 5^{th} grade, 8^{th} grade, and 12^{th} grade completion rates with logit models. We will answer the third question by looking at effects of the father's death on dropout rates in duration analysis. The fourth question will be answered by creating two fathers' death dummies to capture and compare the effects of death faced during school age and pre-school periods in all analyses. Our secondary aim in this thesis is to analyze an effect of the death of a child's father on the probability of leaving home.

The challenge of this study is the fact that there are some other variables that can affect fatherlessness and education at the same time and create correlation not causality. For instance, the poor economic conditions can lead to both father's death and child's low education attainment. However, in the empirical estimation, we control the basic characteristics such as birth place and father's education as exogenous variables; we try to overcome this problem as much as possible. In addition, the death of parents is used as an exogenous variable in some researches

which focus on the parental absence (McLanahan, Tach, Schneider, 2013). The reason for choosing death rather than divorce is related to the fact that divorce or living separate is a choice that parents take. For instance, disputes about money is the main reason for those choices. This financial difficulty may result in both divorce of parents and poor outcomes for children, which means that poor school outcomes like dropping out may come from some unobservable factors like poor income, not solely divorce. On the other hand, death is an unexpected incident which creates income shock to family and influences child's psychology. Hence, it is more convincing to use the death rather than divorce in analysis of father's absence and child's development.

In order to achieve the aims and overcome the challenges of the study, we use a dataset from the Demographic and Health Survey (DHS, 2013) conducted by Hacettepe University Institute of Population Studies. This is a unique survey which includes information about timing of father's death. It is a great advantage to use this data set since we can observe every member at their respective ages, thanks to retrospective characteristic of the data. Since the data includes features of children, which do not depend on time, we try to eliminate the endogeneity problem in this study. In the literature, many studies use panel data to get rid of the endogeneity problem in their researchers so that they can control individual fixed effect. However, it is hard to find such data which is long enough for capturing effect of bereavement. In fact, there are some disadvantages of panel data such as observation loss, because of recall problems and attrition. For example, bereaved groups are more likely to drop out from the survey owing to the reallocation of their time or changing residence (Ford and Hosegood, 2005).

In this study, a variety of methods are used to understand the effects of paternal deaths on children's education. These methods are logit estimations and duration analysis.

The study contributes to the literature by analyzing the effects of orphan-hood on child's educational outcomes in Turkey since the linkage between orphan-hood and education has not been studied yet in Turkey. The results of this thesis can be

beneficial for policy recommendation, not just as government monetary aids but also for some policies which focus solely on orphans, like encouraging their school participations.

As noted earlier, the thesis also investigates the intergenerational education mobility in Turkey by looking at three female generations.

The transmission of parents' poor educational backgrounds to the next generations can be seen as an obstacle in getting equal opportunity in labor market, marriage market, and eventually welfare. If the intergenerational link of educational attainments is weak and insignificant, transmitted inequalities can be gradually diminished in the society since education is associated with economic outcome such as higher earnings and better health. Specifically, policy makers have a concern whether an initial disadvantage may be transmitted from the previous generation to the next (D'Addio, 2007). In general, educated parents bring a variety of utilities to children. Having more educated parents increases the probability of children being more educated because educated parents give a priority to education and training of their children among all expenditure. That is, highly educated parents tend to encourage their children more to achieve high levels of education (Boudon 1973, 1974). Also, children's eagerness about getting trained increases if their parents are more educated (Ermisch et al., 2006). Children see their parents as role models and this gives them a motivation to complete higher grades in their schooling life. In addition, with education, parents are able to be differentiated in the labor market and earn higher income. With this higher income, the chance of getting more and quality education of children is enhanced. Also, educated parents are more likely to have the right networks which may help children to get a good job or have a good marriage via network channels. Finally, an educated parent is a sign of high intelligence and high IQ since completing degrees requires these qualities. These qualities are also transmitted to children via biological channels. Through these benefits of having more educated parents, the future welfare of children eventually rises. In Turkey, father's education can be a good proxy for income or wealth of a household. Mother's education can be seen as a positive variable in children's lives since it

raises the income of the families. Furthermore, more educated mothers have the ability to use available family resources in a more efficient way. A number of studies in developmental psychology have documented that employed mothers can affect school outcomes of their children through differences in childrearing which includes encouragement of independence and maturity demands (Hoffman, 1998). However, more educated mothers are more likely to participate in labor market and devote less time to housework and child care (Popkins, 1976). If children's utility function does not only depend on the amount of education they get, but also the parental time devoted to them; their utility function and even efficiency of education may decrease. The same thing is valid for fathers but the effect that prevails could be understood by looking at the overall impact of education of parents on children's life. In our study, the coefficient of the main exogenous variable will capture all impacts of parental education on children's educational attainment.

Among all these areas and mechanisms, transmission of education through the generations is also be analyzed in this study. The first aim is to look at the effect of grandparent's educations on mother's educational life and the effect of parent's on child's educational life for only girls. Therefore, we can see the intergenerational education mobility between two generations and its trend over time. In this light, our main aim is to analyze whether the educational mobility has decreased over time by using primary, secondary, and higher school completion rates as dependent variables for both first and second generations. Therefore, the results of this thesis can be used to give a policy recommendation by considering the female population since the inequality in getting education between children with educated parents and children with uneducated parents could create is unfair. Hence, understanding the persistence in education is essential to target policy measures adequately.

To reiterate, a good education is critical for an individual who was born to a low-income family to be able to switch to an upper level of income (Aslankurt, 2013). Regarding the importance of transmission of education, looking at three generations will give us the clues about the trend and possible policy recommendations. The questions of this study can be summarized as follows:

- Is there any significant effect of grandparents' educations on mothers' primary, secondary, and high school completion rates?
- What is the magnitude of the association between mother's education with grandmother's and mother's education with grandfather's education?
- Which one of the grandparents (grandfather or grandmother) have the highest effect on mothers' education?
- Is there any meaningful effect of parents' educatiosn on children's the 5^{th}, the 8^{th}, and the 12^{th} grade completion rates?
- What is the magnitude of the association between children's education with mothers' and children's education with fathers' educations?
- Is there any difference in association of educational attainment in the first (mother-grandmother/grandfather) and second generation (children-mother/father)?
- Is the current intergenerational education mobility higher or lower than the past?

The challenge is that there are some unobserved variables that can affect both parent's education and children's education at the same time and create correlation between the children's and parents' education variables. Family characteristics, parental behaviors, and genetics such as IQ can be unobservable factors in the analysis. For instance, high intelligence can lead to get higher education for both parents and children since high intelligence is also transmitted from one generation to another. Hence, establishing causality is rather difficult. We try to minimize the effects of omitted variables in our analysis by controlling for birth place, sibling number, and place of residence.

The dataset we use comes from the Demographic Health Survey (DHS, 2013). It is a unique survey which includes information of grandparent's educational variables. It is a great advantage to use this data set since we can observe three generations with their education information. In other words, it is the only data set giving the education attainments of both grandmothers and grandfathers for Turkey.

In this study, two models are constructed; one of them is for the first generation (mother-grandmother/grandfather) and the other is for the second generation (child-mother/father). These models will be estimated with logit model via STATA.

This study contributes to the literature by analyzing the intergenerational transmission of education in female population by considering three generations. In Turkey, the linkage between parental education and children's education has been researched in some studies. Tansel (2002) investigated the determinants of school attainments of boys and girls in Turkey using the 1994 Household Budget Survey. Apart from permanent income, parent's employment status, location of residence, school availability and school quality, and effects of parent's on the education status are tried to be estimated for boys and girls with different age groups for different school levels separately. The key result of that study is the fact that effects of the both parents' educations on the probability of their daughters' achievement was larger than on their sons' achievement, except for the mother's education at the primary level. That is, there is less educational mobility in girls rather than boys. Tansel (2015) points out the intergenerational transmission of education using the 2007 Adult Education Survey. They find that the intergenerational educational coefficient of mothers is larger than that of fathers and intergenerational educational mobility has increased significantly for the younger generations of children in Turkey. However, these studies consider only two generations. Our study is a bit advantageous since we use three generations and we try to analyze whether the mobility has increased over time or not.

This thesis is organized as follows. The second part discusses theoretical and empirical literatures. The third part introduces the education system in Turkey. The fourth part describes the data and definitions used in this study. The fifth part explains the methodology of this thesis. The sixth part summarizes the key results of father's death and the seventh part provides the results of intergenerational transmission of education. The final part presents concluding remarks and policy recommendations.

CHAPTER 2

LITERATURE REVIEW

The literature chapter is composed of four main parts. The first part introduces the theoretical background about income shocks on human capital formation. Theoretical papers on paternal loss generally focus on the human capital accumulation of orphans and the conditions under which it can create negative outcomes for children. The papers on orphan-hood are generally empirical in nature. This empirical literature will be summarized in the second part of this chapter. The third and the final part discuss the intergenerational transmission of education in the light of theoretical and empirical literature, respectively.

2.1. Theoretical Literature Review

Borjas (1996) question about factors that lead to get higher education for some individuals and reasons that lead to drop out before finishing high school for other individuals. There is an economic trade-off in the individuals' decision. S/he can enter the labor market and earn wage in labor market until retirement age. If the person attend college, s/he gives up wages and incurs direct of going to school such as tuition, books, and fees. In labor market, the high wage is paid to workers with more schooling. In this setting, the present value of discounted future earnings are mainly depend on the discount factor. So, the rate of discount have an important role on the decision of whether a person goes to school or not. A high discount rate means that an individuals gives a low value to future earnings. Since the returns to an investment in education are collected in the future, persons with high discount rates could not wait that much and enter into labor market. The rate of discount also reflects time preferences. It is related to how much people are willing to give up some of today's consumption in return for future earnings. The stopping rule maximizes the individuals' present value of discounted life time earnings. If the marginal rate of benefits of getting one year more education is higher than the marginal cost of getting one year more education, then the person continues to get education; otherwise, s/he does not.

In 1979, Becker and Tomes develop a model that looks at the linkage between intergenerational altruism and investment in children's human capital. The model does not predict any effect of parental death on school enrollment of children due to the assumptions it makes. The first assumption, perfect capital markets allows families to borrow so that they are not liquidity constrained. Investment decisions including human capital are then determined by the rates of return. In the second assumption, school is valued for its contributions to future income. The value of schooling is not affected by parental time invested in children and bereavement. The fourth assumption directly states that the opportunity cost of children's time is not affected by the death of a parent. And finally, parents care equally about each child and make decisions to pay for education by considering children's future productivity. Therefore, the family's optimal investment in children is found by equating marginal cost and benefits of education. In this framework, parental loss does not affect the families' investment in their children.

In 1986, Becker and Tomes use the following model:

$$U_t = u(Z_t) + \beta U_{t+1} \qquad (2.1.1)$$

where Z_t is the consumption of parents and β is a constant that measures the altruism of parents.

They reconsider the issue of parental investment in children by considering also imperfect capital markets where families are not able to borrow money whenever they want and whatever amount they want. Initially, they follow the previous paper (Becker and Tomes 1979) in assuming that cultural and genetic endowments are transmitted by a stochastic-linear or Markov equation:

$$E_t^{\,i} = a_t + h\, E_{t-1}^{\,i} + v_t^{\,i} \qquad (2.1.2)$$

where E_t^i: is the endowment of the i^{th} family in the t^{th} generation, h is the degree of "inheritability" of these endowments, and v_i measures unsystematic components or luck in the transmission process. a_t can be interpreted as the social endowment common to all members of a given cohort in the same society.

Parents cannot invest in their children's endowment but they can influence the adult earnings of their children by expenditures on their skills, health, learning, motivation, and many other characteristics. The abilities of children, preferences, and fertility of parents are the factors to determine the magnitude of expenditures on children. Parents can influence the future welfare of their children by influencing their potential earnings via human capital investments.

To analyze this impact, a model with two periods of life where adult earnings depend on human capital and luck can be written as:

$$Y_t = a_t + \gamma (T_t , f_t) H_t + l_t \qquad (2.1.3)$$

Where H_t is human capital, l_t is the market luck. The earnings of 1 unit of human capital (γ) is determined by equilibrium in factor markets. It is associated positively with technological knowledge (T) and negatively with the ratio of the amount of human capital to nonhuman capital in the economy (f). Also, the adult human capital is determined via the initial endowments, parental and public expenditures. They assume that parents can borrow to finance expenditures on children to maximize the future net income of their children. Then adult human capital determined by endowments inherited from parents and by parental (x) and public expenditures (s) is represented as follows:

$$H_t = \Psi(x_{t-1}, s_{t-1}, E_t) \qquad \Psi_j > 0, \quad j = x, s , E \qquad (2.1.4)$$

Note that the human capital and earnings of children do not depend on their parents' assets and earnings because poor parents can borrow what is needed to finance the optimal investment in their children.

The marginal rate of return on parental expenditures (r_m,) is defined by the equation:

$$\frac{\partial Yt}{\partial xt-1} = \frac{\partial Ht}{\partial xt-1} = \Psi_X = 1 + r_m(x_{t-1}, s_{t-1}, E_t) \quad (2.1.5)$$

$$r_m = r_t \quad \text{or} \quad x_{t-1} = g(E_t, s_{t-1}, r_t) \quad (2.1.6)$$

The amount invested in children and aggregate stocks of human capital determine the rate of return of parental expenditures. If investment in children rises, the marginal utility that comes from this investment declines with increasing opportunity cost of making this investment. In this model, human capital does not depend on parent's income and wealth because they can borrow whatever the need is to finance the optimal investment of children. Parents can separate investments in children from their own resources and altruism toward children.

However, access to capital markets may be imperfect. In that case, parents must finance investments in children either by selling assets, by reducing their own consumption, or by reducing the children's consumption. If parents have no assets, expenditures on children by parents also depend on earnings of parents (Y_{t-1}), their generosity toward children (w), and the uncertainty about the luck of children (ε_{t-1}).

$$x_{t-1} = g^*(E_t, s_{t-1}, Y_{t-1}, \varepsilon_{t-1}, w) \quad \text{with} \quad g_Y^* > 0 \quad (2.1.7)$$

If families have sufficient assets, investment in children remains constant after a negative income shock. In addition, if the insurance system is well developed, the living standard and investment in children are not affected by negative events. On the other hand, families with liquidity constraints or without insurance have to make some arrangements. In order to finance investments in human capital, they could reduce their own consumption. A reduction in their own consumption leads to increase in marginal utility of own consumption relative to the marginal utility of

human capital investment in children. This can cause a decrease in human capital investment in children. Even if some families are aware of the fact that future earnings of children can be raised by providing more education to children, since household preferences and the value of children's time can change, other family members generally mothers reallocates the restricted sources such as time and money among educational, health, foods, and accommodation expenses. In that process, children may quit school and participate in the labor market. As noted in the introduction part, through these arrangements, both labor supply and expenditure adjustments take place, unless there are financial transfers to the family.

In his 1994 study, Sullivan (1994) considers the importance of traditional coping mechanism in orphans' lives. This mechanism is like an informal insurance supplied by extended family members or neighbors. A well-working traditional coping mechanism may also provide a stable school enrollment after loss of a parent in the presence of imperfect capital markets. Child care, meals, and other financial resources provided by neighbors are significant to sustain children's wellbeing (Townsend, 1995). On the other hand, both Sullivan (1994) and Townsend (1965) state that there is also possibility to see negative outcomes in spite of informal insurance. This is explained by reciprocity. If a family faces a temporary shock and their neighbors step in to help, these neighbors would also expect help in their bad times as well. In other words, the informal insurance system works best if there is reciprocity. That is, if shocks are large and permanent such as death of a parent, the system does not work which suggests that investment in children might decline.

Gertler, Levine, and Ames (2003) state that the loss of a parent can be seen as an income shock since the main bread earner in the family is generally men. In addition to the dramatic psychological effects associated with death, this incident might reduce financial resources and parental care which are essential factors for children's educational life. They give three explanations by which parental death can adversely affect children even without financial constraints. In the first explanation, education is seen as a parental consumption good, not just an investment. With death, parent's

preference can change and enrollment rate can reduce as result of declining family income. Secondly, parental time is one of the inputs into children's education function. The death of a parent naturally reduces the time devoted to children and the surviving parent may have less time to help children with homework and educational activities. Finally, the trauma of orphan-hood can make studying difficult for children. Eventually, this can bring withdrawals from school.

In 2011, Glick et al. develop a model of household investment in children's education based on the framework of Jacoby and Skoufias (1997). The model explains the pathways of economic and health shocks which could cause children to drop out of school. They also consider several scenarios related to credit and labor markets. The logic behind the investment model is that children can attend school as long as the marginal benefit of schooling exceeds the marginal cost of opportunity cost and direct costs. Jacoby and Skoufias (1997) showed that if there is access to credit market, families borrow to offset transitory income shock such as parental death. Therefore, investment decision in education stays unchanged. Similarly, Baland and Robinson (2000) state the fact that children from families with liquidity constraints may work though the return of alternatives like going to school is higher than that of working. However, Glick et al. showed that even if credit markets are complete, child's labor can be optimal for many activities at home. A child will remain in school if the discounted future benefits of additional schooling exceed the opportunity cost of time that would be spent on home or work an direct costs. Otherwise, dropout becomes more likely.

From a policy perspective, it is important to understand the factors behind dropouts. Jordan et al. and Watt & Roessingh (1994) develop a framework to explain the reasons behind the drop-out behavior of children. Children can be pushed out, pulled out or drop out of school. The factors such as tests, attendance and discipline policies may result in children being pushed out. Factors such as illness, financial difficulties, out-of-school employment, family needs can pull students away from school. School drop can be due to poor academic performance. Indeed, the first two factors lead to

poor academic performance. Parents' death can exacerbate the reasons explained above. Because of the psychological effects of a parent's loss, children are likely to perform poorly at school. This can be defined as a "push" factor. Financial worries pull children away from school after parental death. Finally, they may drop out because of poor academic performance following the death of their father.

Theories from a variety of fields such as psychology and sociology suggest that parents' active involvement in their children's life by increasing their productive common time can promote children's educational attainment. Especially, "authoritative" parenting style that sets up the clear and honest relationship between parents and children is associated with higher levels of child achievement (Steinberg et al. 1992). For example, living with parents who like reading may enhance this behavior in children's eyes. Parental effort in the labor market can be also seen as a drive for finding jobs thanks to parental network. Even though deceased parents still can serve as role models and affect expectations and aspirations of children, the impact would be smaller (Kalil and others, 2015).

In regards to the theoretical litrature about intergenerational transmission of education, many researchers have aimed at understanding the inequality among individuals in terms of education, wage outcomes, and marriage decision. The reason of this inequality can depend on a variety of reasons such as family characteristics, genetics, social and environmental factors. In the literature, this issue is deeply explained by considering these factors and their linkages to children's future education, labor market, other economic outcomes and decisions.

The theoretical literature in patterns of intergenerational mobility has two directions. One branch is opened by Blau and Duncan (1967). They look at the linkage between socioeconomic status of children and socioeconomic status of parents. In this framework, the only focus is whether or not there is an impact of poor parental backgrounds on children's future outcomes rather than the transmission mechanism. The second branch sheds light on the determinants of income in the human capital

framework. Becker and Thomas (1979, 1986) developed a model which combines the parental, monetary, and social investment in children with their future income. In fact, the model reveals the fact that intergenerational mobility is affected by propensity to invest in children, the degree of inheritability of initial endowments, and the capital market constraints. In this framework, children begin life with a genetic endowment transmitted by their natural parents. Transmission of endowment mechanism works through the degree of inheritability which is taken to be greater than zero and less than one. parents with higher education are likely to raise children with high levels of schooling relative to the mean. The process of combining natural and cultural endowments with education will create human capital for individuals, which can be used in the labor market. In addition to the inheritability of initial endowments, parents can influence future socioeconomic status of their children by making expenditures on their skills, health, learning, and motivation. The amount and context of the expenditures depend on parental preferences, income, and liquidity constraints. With more money and easy access to capital market, parents are able to use their monetary resources on children's development. In other words, they can reshape their budget constraints and make the investment on a child's wellbeing. In addition, parents have a utility function which relates the preferences with nominal values. Constrained optimization solution generates the optimal amount of expenditures on a child. At that point, marginal utility of investing one more unit on a child's wellbeing is exactly equal to the marginal cost of making this investment.

The future labor market outcome of a child is based on many variables such as their future efforts in labor market, characteristics of a child, and education level of a child. In Becker and Thomas' setup, human capital is a key determinant of wage earnings. Therefore, differences in human capital such as education is one of the key instruments for understanding the income inequality. To assess the central role of education, Solon (2004) sketch the intergenerational transmission model. In his theory, the intergenerational transmission of income depends on the productivity of human capital investment, the returns to human capital and the persistence in intergenerational inheritance of skills. His finding suggests that the intergenerational

persistence in educational attainments can be reduced with stable public investment in education and the high earnings return to human capital.

Haveman and Wolfe (1995) view intergenerational transmission mechanism in a wider framework. The attainments of children depend on governments', parents', and children's choices. All of these agents make an analysis of costs and benefits. In other words, governments, parents, and children have their own utility functions and resource constraints, and they make choices with respect to them. For example, governments have policy instruments such as taxing, spending, and regulatory policies. The choices of governments indirectly affect the parents' income and eventually parents' decision about children's investment. Also, given their initial endowments being the resources which are invested on them, and the incentives that they confront, children make choices about their education. The solutions of all three optimization problems will end up with children's educational attainments.

Roemer (1998) uses "leveling the playing field" as a metaphor to describe giving everyone equal opportunity. Children from disadvantaged social backgrounds may face the difficulties in their life compared to children with more fortunate childhood since their skills are relatively low to find a proper job in the market. Finding job is the major area where an unequal competition takes place. There may be several factors that can lead to be accepted for a job in competitive environments like nationality and sex. The first step to sustain the equal opportunity in job market is to sustain the equal opportunity in education. Internal sources such as genes, family, and neighborhood and external sources such as teachers, schools, and books are the factors that affect the education of children. Efficiency of these resources is also another factor which should be taken into consideration to decide whether individuals have equal opportunity in their life or not. Transformation of education investment into a good job or good marriage depends on individuals' efforts. In other words, with the same education expenditure and even with the same family characteristics, individuals cannot reach the same level of education or quality of life because of the different personal efforts. However, the notion of equal opportunity

proposes that children with different amount of resources should be compensated, but this is not valid for individuals with different effort levels.

Roemer supposes that some certain fraction of national income is allocated for education expenditure for children. Children have different types with respect to their ability to transform educational resources into future economic productivity. Children have also different effort levels. In this framework, the life cycle contains two periods. In the first stage, children get educated and in the second stage, they will be adults with income. This future income depends on their types, efforts, and the educational resources invested on them by their parents in the first stage.

Policy planners can improve the equality for opportunity by distributing the available educational resource among the current generation and tax policies which are imposed on the next generations and redistributes the income as a whole.

The model is constructed as follows. There are two dates, 0 and 1. At date 0, two types of children exist in the society, type 1 and type 2. The available educational resources are represented by R per capita. The wage of date1' children in date 2 will depend on educational resources invested on them and their efforts. Wage production function can be written like that

$$w_t=w_t\,(R, e) \qquad (2.3.1)$$

where w_t is the wage at date 1 of a type t child, where R is the resource invested in his education, and e is the effort he applies. Efforts can be high or low in this setup.
It is assumed that w_t is separable. Therefore, increasing functions h_t and ψ_t exist such that

$$w_t\,(R, e)=h_t\,(R)\,\psi_t(e) \qquad (2.3.2)$$

Also, the earning capacity of the adult a type 2 child will become larger than the earning capacity of the adult a type 1 child in the model.

$$h_{2(}R) > h_1(R) \quad \text{for } R>0 \tag{2.3.3}$$

$$h_t(0) = 0 \tag{2.3.4}$$

When the children become adults, their utility function becomes u (x, L), where x is income and L is labor devoted to the job. Therefore, in utility maximizing framework, the amount of labor force is decided.
The social planners use two instruments to equalize the opportunities for welfare of future adults, who are today's children. Educational resource (R) and income tax (τ) are two policy instruments for policy makers. Effort level of children is not affected by the tax regime.

In utility maximizing framework, adult welfare of all children with the same level of effort is equalized. Mathematical derivation suggests that if all children expend the same effort, the same adult earning capacity will be reached regardless of the type of children with a given sufficient educational resources. Furthermore, the effects of children's backgrounds and educational resources can be compensated by the distribution of educational resources.

However, education is only variable to acquire the income in this model. This conventional economic assumption is unrealistic since children can have other skills as inputs in a person's production of welfare such as self-esteem. Moreover, self-esteem is gained as well in the process of education. If this fact is also taken into consideration, expending educational resources on disadvantaged children becomes a more important policy issue. If there is a need to equalize the opportunities, social interventions are necessary before the competition begin. After the competition starts, governments should not interfere in the market.

Sociologists and developmental psychologists have also contributed to the literature on children's attainments. The socialization and role model effect is one of the explanations. The primary role models are generally parents and their behaviors and attitudes like educational expectations affect the cognitive and social-psychological development of children. Other interesting explanation is related to the working mother perspective. As noted earlier, a child' current and future wellbeing is related to both monetary and non-monetary variables. For example, family income is much more if mothers also have a job than the family income with unemployed mothers. In fact, employed mothers are likely to be educated more and are more likely to give a priority to educate their children. All of these are the positive factors employed mothers came to the mechanism of intergenerational transmission. On the other hand, child care time devoted by mothers may decrease if mothers have a job since working mothers spare less time on their children. Within the lights of these theoretical explanations, Jacqueline Macauley (1997) find that more educated mothers are likely to work and there is an increase in parental income which might be offset by the reduction in child care time. Moreover, many studies in developmental psychology have documented that employed mothers can affect school outcomes of their children through differences in childrearing which includes encouragement of independence and maturity demands (Hoffman, 1998).

2.1.1. Girls vs. Boys

The effect of parental loss cannot be uniform in the household in terms of sex. For instance, the effect of parental death can be smaller on boys since future return of education is expected to be higher for boys (Alderman and Gertler, 1997). According to Becker and Tomes's theory, a higher opportunity cost of time reduces investments in education. In paternalistic societies, boys are likely dropout more than girls since boys undertake the responsibilities of fathers such as working and bringing money home (Glick et al, 2011). Therefore, boys' opportunity cost of time is much higher than girls. Hence, we expect to see more dropouts among boys in paternalistic societies. Furthermore, the present value of discounted future income is relatively

higher for boys than girls since boys are able to earn higher wages in labor market. In conclusion, whether the parental death has negative educational effects on boys and girls depend on the family characteristics of the societies. The effects may change from sample to sample, from one region to another region.

Thomas (1994) states that mothers and fathers' investment decisions on girls and sons can be different. For example, in many societies, boys participate in working life with their fathers whereas daughters work with their mothers. In addition, in their old age, women generally keep contact with their daughters. So, most women prefer to allocate more resources to their daughters rather than their sons (Thomas, 1994). Wongmonta and Glewwe (2016) also explain this gender bias. Explanations are like Thomas in the context of caregivers of their elderly parents. Daughters are expected to be the main caretakers of their elderly parents. This gives parents an incentive to educate their daughters, which will lead to a well-paying job. Similarly, Kalil and others emphasize that the correlation between outcomes of parents and the outcomes of children come from nature, nurture, and an interaction of these two factors (Kalil, et al., 2014). They made a hypothesis that the intergenerational education coefficient between fathers and sons is more than between fathers and daughters. The explanation is that fathers have more close relationship between boys since boys see the father as a role model rather than mother. Moreover, fathers of sons invest more resources for human capital formulation of their boys rather than investing in daughters (Lundberg, McLanahan, and Rose 2007). That is, the same-sex modeling has an effective explanatory power to understand the educational attainments for each gender. Cognitive learning theory also suggests that fathers have more influence on the boys whereas mothers have more impacts on the girls (Perry and Bussey 1979). Therefore, these theoretical perspectives suggest father' presence plays a greater role in the schooling outcomes of sons than daughters, whereas mothers' presence have a role in schooling outcomes of daughters rather than sons.

2.1.2. Urban vs. Rural

In urban areas, people generally have high level of educational background and high socio-economic status whereas in rural areas, people are mostly less educated and mainly concentrated on agricultural activities. In those areas, the benefits of getting education is much more than that of rural areas since wage are likely to increase with an additional schooling in urban places. In addition, the opportunity cost of time of boys are relatively higher than that in rural areas. Hence even if marginal cost of getting extra one year of schooling are the same in both areas, the discounted present value of future earnings are higher in urban areas than rural areas. Furthermore, in all areas, the schooling status of children are positively related with the education level of parents (Barman, 2010). As a result, in rural areas, it is expected that there is already a low level of school completion rate irrespective from shocks such as paternal loss. On the other hand, in urban areas, the loss of paternal loss may distort the transmisson mechanism of education from fathers to their children. Therefore, the negative effect of paternal loss can be seen more in the estimation for children who live in urban areas. In addition, Kırdar et. al, (2015) state that there is a fall in the total schooling costs of completing secondary and high school in rural areas in Turkey. Also, free bussing facility in this area has been extended to 12 years with the 4+4+4 education law enacted in 2013. This means that the cost of getting education decrases in the rural areas with the help of Turkish government' policies. Furthermore, in urban areas, opportunity cost of going to school is higher than that of rural areas. Working in some workplace provides children money which is the most essential thing in urban life (Ersado, 2005). On the other hand, in rural areas, money may not be so important since the rural economies are not monetized as urban areas. Addtionally, in rural areas, families and relatives help manetary and nonmaterially each other since they live in a close-knit society. Hence families can offset the negativities of some shocks with the help of their relatives or neighbours in rural areas.

2.1.3. Mother vs. Father

In societies where men are the main wage earners, the loss of a father has a greater impact than the loss of a mother. Also, men generally work in the formal sector, in well-paid jobs. If the only reason for inequality of educational attainment is liquidity constraints, given this inequality in the labor market, father's absence is more crucial for children than mother's absence (Gertler, Levine, Ames, 2003). In addition to the income effect, the substitution effect plays a role due to the changing preferences of the mother. Also, in many parts of Turkey, social support networks are based on the father, not the mother. So, the father's loss may result in fewer networks which are necessary for acquiring a job or arranging marriage. On the other hand, some intra-household bargaining models suggest that mothers are much more efficient decision makers and devote their resources to children in a much generous manner. Thomas (1997) provides an example of how mothers' allocation of resources to children is higher than that of fathers. In the model, household demand for each element of commodity consumption goods and home-produced goods such as health, education depend on prices, wages, household characteristics, individual non-labor incomes, and unobserved heterogeneity. In this framework, the impact of total income in the hands of different individuals on various outcomes is tested. Women are more likely to spend their additional income on human capital goods such as education, health, and household services as well as on leisure goods. Foods and housing have the lowest share in women's preferences. On the contrary, lower shares are spent on human capital if income is under the control of men.

2.2. Empirical Literature-Father's Death

There is a large literature which examines the relationship between parental death and the child's wellbeing in the short run and in the long run. One of those papers, Case and Ardington (2006) examine the effect of parental death on various child outcomes using a longitudinal data set from a province in South Africa. The survey has two rounds; one was conducted in 2001 and the second one in 2003-2004. The second round of the survey included detailed questions like educational expenses on each child. According to the estimation results, maternal death leads to two-tenths of a year less completed schooling, conditional on age and 2 to 3 percentage decrease in

the probability of enrollment. Indeed, school enrollment, years of completed schooling, and school expenditure are less among children who lost their mothers. On the contrary, the relationship between paternal death and school outcomes is found to be insignificant. Paternal orphan-hood may lead to poor economic conditions and these poor conditions may reduce the year of schooling and expenses on children. That is, there can be a variable which explains both parental death and the poor school outcomes of children. Therefore, what is observed might just be a correlation. Therefore, establishing the causal link between parental death and children school performance is very hard especially in cross sectional data. However, in the article by Case and Ardington, longitudinal data provide observations for children through time so that the paper can give alternative explanations as to whether children have poor performance after parent's death or have also poor performance before the occurrence of parental death.

Gertler et al. (2004) use both parametric techniques like conditional logit as well as semi nonparametric matching techniques to assess the impact of parental death on school enrollment. The data come from Indonesia's National socioeconomic Survey between 1994 -1996. In addition to the standard parametric technique (conditional logit with a fixed effect for each community), the large sample allows the use a semi nonparametric technique so that the youth who have lost a parent are matched with children who live with parents in almost the same conditions and the same neighborhood. The target group is individuals between ages 6 and 20 who have lost their mothers or fathers within a year prior to the survey. To compare the enrollment means of students in the bereaved and control samples, the set is divided into 12 overlapping 4 year age groups. To eliminate the unobservable variables that can affect both parental death and school outcomes, logistic regression for the probability of school enrollment is estimated while controlling for observable household characteristics with a fixed effect for each enumeration area. Therefore, community characteristics that may be correlated with death and enrollment are taken into account. In other words, the regressions controls some variables that influence all children in a neighborhood like distance to a health clinic and school. Nonetheless, Gertler and others argue that the matching method may give more powerful and

accurate results than standard regression techniques since this method finds the closest individual who is most similar to the bereaved observation. The key finding is that there is a large effect of parent's recent death on child's enrollment. For instance, a recent orphan is on average 2 times more likely to leave school compared to children with living parents. Another crucial finding is the fact that dropout rates decreases when grade increases. Analyzing the effect of paternal death at each grade, the effect of paternal loss on elementary school attendance is slightly higher than that of higher grades. This effect is highest for youth at the transitions between primary and junior secondary school and between junior secondary and senior secondary school. Moreover, overall enrollment declines as children get older.

Gertler et al. investigate the short run impacts (1-12 months) of parental death on child's dropping out of school and enrolling in school by using panel data from Indonesia and Mexico. They classify the effects into two: exogenous shocks to household income and lack of parental presence which is essential for psychological guidance. The conditional logit results show higher school dropout and lower enrollment among the bereaved children. Paternal death increases the dropout rate of bereaved children in Indonesia. In Mexico, paternal death appears to contribute towards delayed school entry and reduction in education for older children.

Ainsworth et al. (2005) analyze the relationship between parental death on primary schooling using maximum likelihood probit regression. They use a panel survey which includes information about children aged 7-14 from north-western Tanzania for the time 1991-1994. One of the key findings is that school hours are significantly lower in the months prior to death. But, recovery is observed after death, which means death can be seen as a temporary shock to families. Among girls, school hours are sharply reduced after the death of parents. It can be inferred that increased opportunity cost of time and money spent on school may impede primary schooling in Tanzania for girls especially after maternal death. Additionally, they find that children who lost one of their parents have 10 percentage point lower attendance rates than children with parents in poor economic conditions. This gap increases to 29 percentage point in non-poor families. The results suggest that children's time

become more valuable before death because of the caring activities for the ill parent and after death because they substitute for the deceased parent. Hence, these are the major reasons which lower primary schooling of children affected by adult mortality.

The same data set is used by Beegle et al. (2004). In the study, 718 non-orphaned children who are surveyed in 1991–1994 are re-interviewed in 2004. Over this period, 19% were faced with paternal death before age 15 due mostly to AIDS so that health and education impacts of parent's loss can be observed. The uniqueness of the study comes from the fact that both health and education outcomes are analyzed. These include height and years of schooling. The researchers use two-stage least squares estimation to overcome the endogeneity problem. The instruments for initial outcomes of height and schooling are past rainfall and last crop shock which have effects on children's life. For maternal orphans, 2 cm less height and one year less school attainment are the consequences. In contrast, there is no causal link of paternal orphans to the dependent variables.

Operio et al. (2008) examine the effects of orphan-hood on the completion of compulsory school education among young people in South Africa since education provides a clue not only about future earning of individuals but also the growth paths of countries. This study uses data of 10,452 individuals from the National Survey of HIV and Sexual Behavior which is based on a survey of young people sampled from nine provinces and includes measures of family composition, household poverty, and educational outcomes. This paper uses the rate of school completion during compulsory education years rather than rate of school enrollment so that potential damage extended into adulthood life can be understood. Also, socio-demographic variables such as age, race and several socioeconomic proxies are used. Apart from examining the effects of orphan-hood on the completion of compulsory school, another aim of the study is to find whether this relationship is independent of socioeconomic conditions, and whether this association differs between males and females. In univariate analyses, school completion is found to be lower among children who lost their parents during school age years especially for males and the

poor. In multivariate analyses controlling for household poverty, females are found to be less likely to have completed school after parent's death. Indeed, father's death before age 16 is associated with not completing compulsory education in the model where socioeconomic indicators are not included.

Another noteworthy article, Kalil et al. (2015) examine the effect of fathers' presence on intergenerational educational attainment by using 1967-2011 administrative data from Norway. The data set enables them to exploit within family variation in father exposure since Kalil and others utilize the age differences between siblings at the time of the father's death. They hypothesize that parental presence is necessary for the transfer of skills and abilities from fathers to children. The first hypothesis of the paper investigates whether an increase in father presence will increase the effect of father's education control variables on children's completed years of schooling at age 27. The second question of this research is whether an increase in father presence will decrease the mother's education control variables on children's completed years of schooling at age 27. They find that spending longer time with father heightens the father-child association in education and weakens the mother-child association. Indeed, these relations are significant and stronger for boys than for girls. For example, 22 years of exposure to a living father, compared to zero years, would increase the predictive effect of father education by 0.1716. Furthermore, since there is no evidence that family economic resources or maternal labor supply are the transmission mechanisms for these results, parental socialization appears to be the possible mechanism.

Apart from these articles which investigate the short term effect of parental death on the education and health outcomes of children, there are some studies which analyze the long term effect of this issue. Grogger and Ronan (1995) investigate the intergenerational effects of father's death on education and labor market by using a rich longitudinal data set which is available between years 1979-1988 from National Longitudinal Surveys of Youth (NLSY). This is an important article since unobserved family characteristics had not been addressed before Grogger and Ronan.

This issue is important since low level of child's wellbeing may not result from loss of father. Indeed, some family specific unobservable may lead to a correlation between orphan-hood and poor education and labor market's outcomes. To overcome this problem, the method of moments estimation is implemented by using sibling comparisons within-family comparisons in this study. Grogger and Ronan differenced the data within families. The number of years children spend in a single parent family is used as a proxy for the main explanatory variable which is the absence of a father. For whites, the model results suggest that each additional fatherless year lowers educational attainment of children by six-tenths of a year. The effect is one and half years for Hispanics. On the other hand, black children who live with a single parent are likely to acquire more education compare to children with both parents. Since, education is an important determinant for the wage level of the workers, the effect of fatherlessness on wages is also analyzed, but there are some mixed results because of data limitation. For whites, wage of fatherless workers are 12 percent lower than those from two parent families, whereas for Hispanics, there is no evidence for a negative effect.

In their research, Shenk and Scelza (2012) aim to show that paternal investment affects adult completed years of education, incomes, age at marriage and total marriage costs by using multigenerational dataset from Bangalore, India between the time periods of 2001–2002. The survey includes interviews with 403 respondents who have at least one married child about their marriage, demographic and socioeconomic characteristics of their current family, and the marriages of their adult children. They find that father's death has a negative impact on children outcomes especially in late childhood or adolescence. In societies where men have control over resources, children may miss many opportunities because of their father's absence. Father's social relationship may help children to get a good job and make a high quality marriage. Therefore, paternal death and timing of paternal death can be very influential on education in childhood, income in adulthood, age at marriage and marriage expenses. Initial analysis compares the mean values of the outcome variables, which are years of schooling, income, marriage age, and marriage cost for

two groups of children by using t-tests. Groups are determined by assessing whether their fathers died before they were 25 years of age or not. Regression results suggest that children who had lost their fathers have lower completed years of education, lower incomes, lower ages at marriage and lower total marriage costs than children whose fathers were alive until they were at least 25 years old. Indeed, the period between ages 16-25 is most significant since father's death affects children mostly in that period for both girls and boys. Also, in later childhood (6–10) and early adolescence (11–15), the death of the father has strong detrimental effects on education.

Gimenez et al. (2012) analyze orphanhood in Taiwan by focusing on the short and long term effects of parental death such as quality of education, educational attainment, and the gender of child affected more seriously. The most striking part of this research is the fact that researchers use six administrative data sets on annual birth and death certificate reports, college university joint entrance exam results, which cover years 2000-2003. To show the long run effects of parental death on human capital accumulation, children are observed at different time periods. College enrollment is used as a proxy for educational attainment and enrollment in public and private college is used as a proxy for the quality of education. The findings suggest that children prefer to enter into the work force rather than getting higher degree in their school after parental death irrespective of their income levels. The children who come from low income families are much more vulnerable (10 percent level larger impact) to death of father rather than children with high income family. In low income families, girls are likely to marry at early ages. For boys, the detrimental impact of the death of father can be seen in getting higher education especially in the families with high income. Boys are likely to enroll into the military after death of either parent. In fact, educational attainment is affected by death of mother than death of father. The probability of taking college entrance exam is low among children who come from the two lowest income quartile because of paternal death. Still, some adverse effects can be observed among children from higher income families in terms of college entrance exam performance. Hence, they also face a

decrease in the quality of education in their future lives and this may be reflected into their future earnings.

Cas et al. (2014) examine parental death on wellbeing of children aged 9–17 at the time of 2004 Indian Ocean tsunami by using a longitudinal data collected in Aceh, Indonesia, before and after 2004. The study investigates short term impacts by considering school attendance and long term impacts by focusing on education trajectories and marriage. The effects are moderate after five years for younger children rather than older ones. Indeed, father loss has negative impacts on males especially for older ones since they get less education after the disaster. On the other hand, older females are most likely to enroll in a school after father's loss. Relative to adults whose parents are alive, older males whose fathers died completed 1.3 fewer years and their school enrolment rate is low. The probability of marrying five years after the tsunami is 7% less among both double and paternal orphans.

2.3. Empirical Literature-Intergenerational Transmission of Education

There is a large empirical literature which examines the relationship between parental education outcomes and child's educational outcomes. The transmission mechanism under this association is also considered in many researches.

For Turkey, there is little researches on the extent of intergenerational mobility except the study by Tansel (2015). She examines intergenerational educational mobility in Turkey by covering a period of about 65 years. Since other studies till 2015 had focused on just one point in time, the importance of the study came in sight. The Adult Education survey conducted by the Statistical Institute of Turkey (TURKSTAT) provides information of parental education of all children by asking children. So, this keeps track on the data of parental education even if children and parents do not live at the same home. There are six cohorts representing age groups 18-24, 25-34, 45-54, 55-64 and 65+. In the study, completed schooling years are used and regressed on parental educational variables in regressions and ordered

probit analysis. In an ordered probit model, the completed education levels are categorized into four levels as primary or less, middle school, high school and university education. For each six-birth cohort, the model is estimated separately. In her findings, she notices that the intergenerational educational coefficient had increased over time in Turkey meaning that educational opportunity among each cohort had improved. However, when parents' educational outcome is poor such as primary education or less compared to post primary educational background, the linkage between parents and children's educational background is stronger. Also, mother's intergenerational education coefficient is larger than that of father's. As father's completed schooling years increase, the probability of getting university education of children also increase. Indeed, younger generations are more likely to have higher intergenerational educational coefficients meaning that there is a stronger relationship between child and parent education. In conclusion, Tansel proposes a policy which aimed at children with poor parental education background and women specifically.

Ferreira et al. (2011) analyze the unequal opportunities by looking at the inequality among adult Turkish women in asset ownership, housing quality, and household wealth using both non-parametric and regression-based techniques using 2003 Turkey's Demographic Health Survey (TDHS). The results suggest that more than two thirds of the most deprived group in Turkey consists of women born in the rural areas of the Eastern region, from mothers with no formal education. Among ethnic minorities, rich and more educated groups, the ratio is even higher. A large wealth gap is observed between women with uneducated mothers and those whose mothers have completed either primary or higher levels of schooling. Also, those who were born in urban areas are considerably wealthier than those born in rural areas. In the bottom opportunity decile, 97% have uneducated mothers and 81% have illiterate fathers as well.

Checchi et al. (2013) analyze the trend of intergenerational mobility of education in Italy by looking at different age cohorts via simple decomposition of the correlation coefficient. Using the Survey on Household Income and Wealth Historical Archive

(SHIW) from 1993 to 2008, the decreasing intergenerational mobility of education in Italy is found and its reason with a high level of polarization are explained. The probability of obtaining a college degree is 20% higher among children with college graduate fathers than the children with high school graduate fathers. Furthermore, this ratio increased to 50% for children whose fathers had college degree compared to children of secondary school graduate fathers. Over the period of investigation, the correlation coefficient between standardized children's and fathers' years of schooling has reduced from 0.63 to 0.50. Therefore, these findings indicate that education in schools is not able to be fully compensated by the poor backgrounds of the family.

Azam et al. (2013) analyze intergenerational education mobility by using a unique representative father-son matched data that Development Survey (IHDS), for India starting from 1940. The sons' and their fathers' educational attainment is measured in terms of years of schooling. They also documented the phenomenon by considering different social groups and state boundaries. They found out improvements in educational mobility among generations, social groups, and state provinces. The Higher Hindu Castes, Scheduled Caste/Tribes, Other Backward Castes (OBC), and Muslims are the four social groups that Azam and others considered. They point out that there is higher persistence for Other Backward Castes and Muslims and lower persistence for Scheduled Castes/Tribes. For instance, boys of less educated fathers are more likely to get higher education than their fathers. However, the probability of getting more education than that of fathers decreases among children with highly educated fathers. Furthermore, there are still significant variations across states. For instance, some states such as West Bengal and Tamil Nadu did not show progress in educational mobility compared to states like Maharashtra and Orissa. Indeed, the average correlation coefficient, 0.52 is higher than the global average, 0.42 which is computed in Hertz (2007).

Aydemir et al. (2013) interest in the degree of generational education mobility considered immigrants and their children in Canada by using the Canada and Ethnic Diversity Survey (EDS). The regression to the mean model is used as an empirical

approach and years of schooling as main regressor. This model did not contain any covariates. Therefore, it is not a causal model, and the aim of Aydemir and the others is to derive a descriptive statistic pointing about the degree of intergenerational mobility. They reach the fact that education attainments of immigrant parents and Canadian-born children are weakly linked in Canada. Indeed, this relation is even weaker for Canadian-born children and Canadian-born parents. In addition, there is upward mobility in educational outcomes of second generation Canadians with immigrated and less educated parents. For instance, for each additional parental education year, Canadian-born children of Canadian-born parents the children of Canadian-born parents obtain an additional 0.3 to 0.4 years of schooling. Aydemir and others point out that some immigrants especially boys still face difficulties in making progress and this situation needs to get attention.

Sen and Clemente (2010) also focus on intergenerational correlations in education by using 1986, 1994, and 2001 waves of the general social surveys conducted by Statistics Canada which contains information about size and birth order. In their model, educational attainments of father and mother are the main explanatory variables for post-secondary educational attainments of individuals. Other exogenous covariates capture family characteristics such as whether either parent is immigrant, and birth rank in Sen and Clemente's model. OLS estimation results show that the transmission of education across generations. Indeed, father's role is greater than that of mothers. Father's schooling is correlated with 0.2 increases in the likelihood of some university education by children. This ratio decreases to 0.17 for mothers. Another key finding is a declining trend of parental education over time on the likelihood of any post-secondary education of individuals. Researchers explain this fact with an increase in returns to college education, and cost of getting this education like low college fees compared to university tuition.

Daouli et al. (2010) look at the trend of intergenerational mobility in the educational attainments of Greek women by using three censuses of Greek Household Budget Survey. They found that daughters' educational attainment depended on parental educational outcomes, especially on mothers' education. For example, the

probability of completing at least lower secondary school for girls with an uneducated father is lower by 20.5 percentage points in 1981, 15.5 percentage points in 1991 and by 25.9 percentage points in 2001 compared to girls with primary school graduate fathers. They also found out that the effect of mother and father's education on children' educational attainment is converging over time. Some environmental variables such as family, regional and other individual characteristics have more power to explain educational inequalities in Greece rather than educational backgrounds of parents.

In 2015, Magnani and Zhu question the impact of parental education on children's education attainment in urban China because China had been faced with an increasing trend in income inequality because of a rapid economic growth. To get rid of the sorted mating, separate parent-child pairs such as father-son, mother-son, father-daughter and mother-daughter are used in the OLS estimation using the 1990 and 2000 data for urban China. In the model, marginal effects of paternal and maternal years of education on the education attainment of children are attempted to be estimated by using completed schooling years as dependent variables. The results suggest that father-son transmission is more effective than mother-son transmission. For daughters' education, the impacts of mothers and fathers had a similar pattern. In fact, Magnani and Zhu emphasize that there is an increasing trend in educational transmission over the years, which means children in the year 2000 had less equal access to education than children in the 1990. Overall, they found out an increasing children-parents education correlation in urban China. This is seen as an obstacle to equal opportunities in children's current education attainments and future labor market outcomes.

Amin, Lundborg, and Rooth (2015) construct a model, which is related with schooling differences between children who were cousins and parents who were twins by using Swedish population aged 16-64 years old in 1999. This special data set gave opportunity to control the influence of unobserved endowments such as parental unobserved innate and childrearing endowments. The result provides a proof that mother's schooling is just as important as father's schooling. For instance, an

extra year of mother's schooling increased children's schooling by 0.058 year. This ratio became 0.046 for fathers. However, when the analysis is repeated in the extent of daughter-son framework, mothers' schooling mattered more than father's schooling and especially for daughters in contrast to twin-based literature. For instance, one additional year of mothers' schooling raised daughter's schooling by 0.095 additional years. In addition, when the a is redone for cohorts, it is seen that the effect of fathers diminished over the time, whereas the effects of mother's stayed constant throughout the time.

Like our aim, which is to look at the intergenerational transmission of education in three descendants, in 2016, Kroeger, and Thompson analyze this issue by considering a three-generation sample from US. The first-order autoregressive transmission AR (1) results suggest that there is a stronger relationship between grandmothers and their grand-daughters than that of between mothers and daughters. The linkage is two times stronger than would be in two generations. Many direct and indirect transmission channels are also affected by this system. For example, the association between grandmother education and daughter education is approximately 0.153 standard deviation units stronger among families which co-reside with grandmothers whereas the association is 0.123 in elementary families. Analysis is also conducted for males and similar results are obtained.

In 2008, Schütz et al. conduct a research about the association between children's educational performance and their family background for 54 countries. The number of books in the students' home is social and economic indicator of family background in the study. Two TIMSS international student achievement studies are used to ensure measures of educational performance in math and science. The regression also controls age, family composition, and immigration status. The results suggest that the linkage is the highest in England, Scotland, Hungary and Germany. On the other hand, France, Canada, and Portugal had the lowest linkages. Indeed, the effect of families on children's education among the former countries is average 2.7 times higher than that of the latter group.

In some researches, different transmission channels have been also investigated and their effects have been attempted to be estimated. Wendelspiess and Jua´rez (2015) focus on transmission channels of levels of intergenerational correlations in Mexico where very low intergenerational mobility is observed. They categorized three channels: the biological transmission of ability, transmission through the economic situation and the education-to-education channel. To overcome omitted variable bias, they conducted simulations equations model. The main model in simulations equations consisted of children's cognitive ability, mothers and father's education variables, wealth, and current consumption level to predict the explanatory variables, years of schooling. In other regressions, mother's and father's cognitive abilities are proxies for children's ability, education of parents is proxied by their cognitive ability, their age, and their place of living of the parents when they were 12 years old. Wealth and current consumption level are also regressed on mother's and father's education, their ability, and their age in Wendelspiess and Jua´rez's model. They found that the long-run economic situation seems to matter more than the current consumption level for children's years of schooling. They conclude that the economic situation of the family had a larger impact than the heritability of cognitive abilities. They found that mother's education had a large effect on girls rather than boys. In OLS and simultaneous equation models, the direct effect of parental education is also highly significant and positive. In fact, the effect of mother is larger than that of fathers.

In 2011, Doorn, Pop, and Wolbers look at the issue by focusing on 28 European countries. They also consider the transmission mechanism as the degree of industrialization, female labor force participation, the structure of the educational system and the political ideology of a country. Using a 250 country-cohort combination from 2002, 2004, 2006 waves of the European Social Survey, the authors suggest that the association between the parents and children's education is stronger in less industrialized nations. The pace of industrialization had also affected the education mobility across the nations. The result shows that when the pace of industrialization is lower, then the education mobility increases. In addition, in the

country-cohorts where women's labor participation rate is higher, the linkage between the parental education and children's education is lower. Concerning the effects of the educational system, educational expenditure is found as a significant variable, which increases the intergenerational education mobility. For instance, when the educational expenditure of a country-cohort increases with one standard deviation, the educational level increases by 0.279 years for children. Furthermore, in country-cohorts, where social-democratic and communist state policies are implemented, the access to education system is higher. This brings more equal opportunity in the education system and decreases the association between parent's education and children's education according to the theory. However, there is no such finding in Doorn, Pop, and Wolbers' estimation.

CHAPTER 3

EDUCATION SYSTEM IN TURKEY

The stages of Turkish education system are pre-school, five years of primary, three years of secondary, four years of high school, and four years of university education. Public, private, vocational, Anatolian, and science high schools are the types of high schools in Turkey. State and private universities are the types of universities which give undergraduate and graduate education in diversified fields from medicine to law. Also, higher vocational schools are available for students who are interested in technical skills required to perform tasks of specific jobs. Turkish education system is under the supervision and control of the Ministry of National Education (MONE). The university education in Turkey is governed by the Higher Educational Council (YOK). Overall, Turkey has 104 states and 62 private universities.

Until 1997, the education system had consisted of five years of compulsory primary school, three years of secondary school and three years of high school education (5+3+3 system). Education was compulsory from ages 6 to 11. In 1997, compulsory schooling was extended to eight years and the Ministry of National Education made necessary expenditures to meet the necessities of increased student population, such as increasing the number of teachers and constructing boarding schools. These substantial investments in school infrastructure are crucial to sustain schooling quality in developing countries with increased school participation rate. The eight-year compulsory schooling affected children born after 1987. In 2005, the high schools were extended from three years to four years. In 2012, compulsory education was increased from eight years to twelve years. The new compulsory structure consists of four years of primary, middle and secondary school (4+4+4). In addition, school starting age, which was 6 in the previous system decreased to 5. If parents think their children are not ready for school, they could delay starting school with a medical report. To make sure that children are sent to school; monetary penalties are implemented on parents who do not send their children to school. The families who

do not send their children to school, though they are older than 66 months will pay a penalty of 15 TL per day. From 1923, education became coeducational and free in state schools in Turkey.

When we look at the schooling rate, only 29 percent of men and 10 percent of women were literate in 1935 in Turkey. According to the data of 1998 wave of the Turkish Demographic and Health Survey (DHS), the literacy rate increased to 89 percent for men and 72 percent for women. Throughout the time and legal efforts such as 1997 compulsory schooling law, these rates increased to 91 percent for women and 96 percent for men in 2014 (TSI, 2014). The country's primary schools have a 99 percent participation rate in 2011-2012 academic year. But this ratio decreased to 67 percent in the secondary level of education at the same period. In addition, the 2013 wave of the Turkish Demographic and Health Survey (DHS) demonstrates that most of the citizens in Turkey attend school. Overall, 84% of men and 72% of women in the 2013 DHS household have completed primary school or more. Similarly, 49% of men and 36% of women have completed at least secondary school (eight years). Despite the advances in literacy and schooling in Turkey, there are still differences between men and women, urban and rural areas, and among the regions. For example, 17.6% of men have graduated from secondary school in rural areas. The ratio increases to 20.7% for urban male residents. While 15.8% of women have completed secondary school in urban areas, the ratio decreases to 12.5% for rural residents. Likewise, for male household population, 13.4% of men have graduated from high school in rural areas. The ratio increases to 33.4% for urban male residents. While 24.5% of women have completed high school in urban areas, the ratio decreases dramatically to 6.6% for rural residents. This difference in schooling years between men and women is higher in urban areas as compared to rural areas. For instance, man's completed schooling years are 2.4 years higher than that of women's in urban areas whereas men's completed schooling years are 0.5 years higher than that of women's in rural areas according to the representative data collected by DHS.

In addition to the efforts of MONE, the national and international projects are applied in Turkish education system to improve the current schooling outcomes. In 2003, through the corporation with UNICEF, MONE started a project named 'Off to School, Girls!', especially focusing on provinces like Istanbul, Diyarbakir, Sanliurfa, and Van by considering girls population who had not attended school in those cities. The target was to increase school participation of girls by 300.000 and constructed new schools and classrooms in 2003. The project was funded by international campaigns, individuals, and UNICEF. The project was extended to 2005. Additionally, Secondary Project (2006-11) supported by the World Bank aims at improving the quality of education and making necessary reforms related to secondary and vocational education.

In Turkey, government assigns budget which is financed by public and private institutions to meet the operational costs of the Turkish education system. Also, some international and non-governmental organizations contribute to the education system in Turkey. MONE's share in the public investment budget increased after implementation of eight-year compulsory schooling law from 15 percent to 37.3 percent and shows a stable trend at 30 percent until 2000. The jump in the expenditures comes from the construction of new schools like boarding schools and the expansion of the capacities of the existing schools in both urban and rural areas (Kırdar, Dayıoğlu, & Koç, 2015). Expenditures on primary, secondary and post-secondary non-tertiary education was 2.5% of the GDP in 2010, lower than the OECD average of 3.9%, but it has increased by 0.7 percentage points since 2000 (Figure 3.1). Annual expenditure per student in Turkey was less than the half of OECD average in 2010. In primary education, the expenditure was USD 1,860 PPPs in Turkey, which is less than the OECD average of USD 7,974 (OECD, 2013).

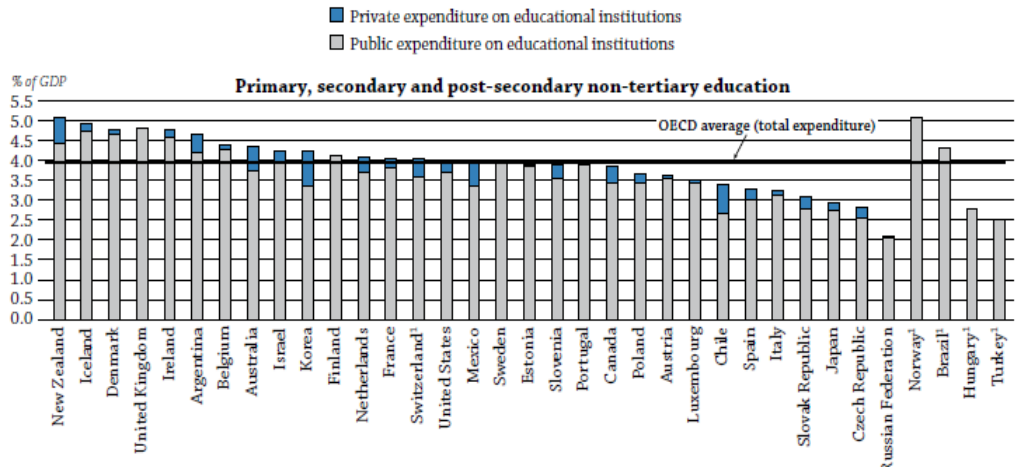

Figure 3. 1: Expenditures on educational institutions as a percentage of GDP
Source: Education at a Glance 2013: OECD Indicators

Through the projects and current expenditures on Turkish education system, the enrolment rate has increased from 30% in 2001 to 64% in 2011 among 15-19 years old (Figure 3.2). Though significant improvements have taken place in the last decade, enrolment rate is still below the OECD average of 84% (OECD, 2013).

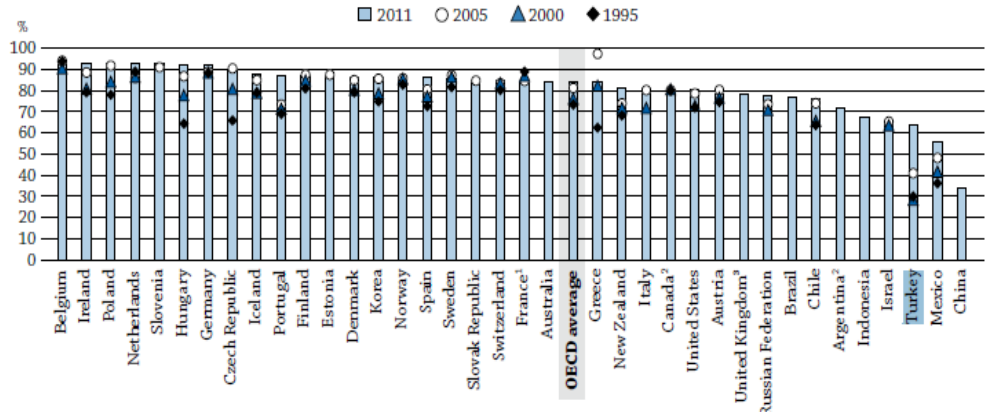

Figure 3. 2: Enrolment rates of 15-19-year-olds (1995, 2000, 2005 and 2011)
Source: Education at a Glance 2013: OECD Indicators

In 2012 in Turkey, participation rate in formal education was 10.1 % of 18 years old and over urban population for the period of 12 months before the 2012 Adult Education Survey conducted by Turkish Statistical Institute (TSI). This rate was 4.1% in 2012 which was higher than 2007 level (2.6%). In 2007, 7.2% of males and 4.5% of females participated in formal education among 18 years old and over

sample. These participation rates increased to 9.8% and 6.8% for male and female in 2012, respectively (TSI, 2012)

From qualitative perspective, the performance of Turkish children is poor as compared to their counterparts in other OECD countries. According to International Student Assessment (PISA) results, reading literacy, math and sciences are the areas where the Turkey performs poorly compared to the OECD average. The PISA 2009 results suggest that Turkey's 15-year-old children have 464 score in reading, which is lower than the OECD average of 493. Still, Turkey was among the largest three performance progress in mathematics and science between the years of 2003-2009 and 2006-2009, respectively. Additionally, student-to-classroom ratio increased after 1997 eight-year compulsory law from 28.6 to 31.2 in 2000. However, the effect was temporary and the ratio rose to 28.4 again in 2011 (Kırdar, Dayıoğlu, and Koç, 2015). Figure 3.3 shows that the ratio of students to teaching staff is 21 students per teacher in primary education (five years) and 18 students per teacher in high school education (twelve years).

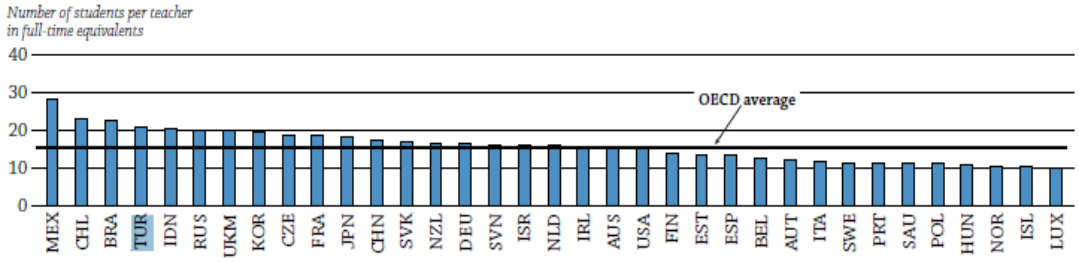

Figure 3. 3: Ratio of students to teaching staff in primary education (2011)
Source: Education at a Glance 2013: OECD Indicators

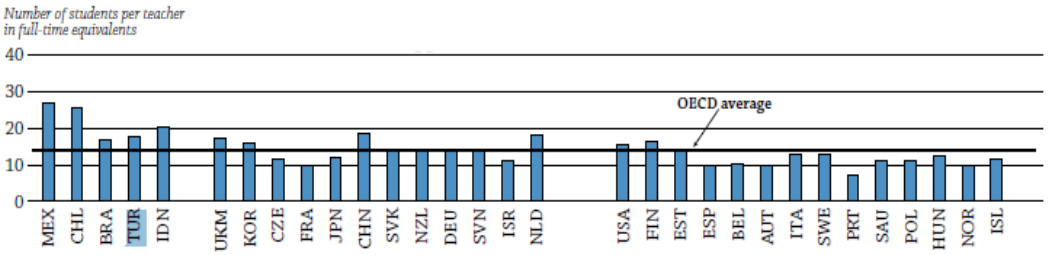

Figure 3. 4: Ratio of students to teaching staff in high school education (2011)
Source: Education at a Glance 2013: OECD Indicators

Overall, we deal with the school attainment of children whose ages are between 6 and 24 in Turkey. Since we use 2013 Turkish Demographic and Health Surveys, our eldest child is 24 years old and our youngest observation is 6 years old. The birth years of these children are 1989 and 2007, respectively. At 1997 which is the year of enacting the compulsory schooling law, our eldest child was eight years old and we expected that this child was at the second year of primary school. In fact, our youngest child had not been born at that year and the children in the 6-21 age range never attend school[1]. Therefore, all our observations capture the effects of the eight-year compulsory schooling law enacted in 1997. In addition, in 2005, the high school education was extended from three years to four years. This change also affected all our observations since our eldest child was 16 years old when the law was enacted and s/he was either at the second grade of high school or out of school. If s\he were in the high school, s\he would have gotten the four-year high school education, thanks to the 2005 law. The same explanation is valid for our other children in the sample because they had not or never started high school in 2005. Therefore, all our samples are also affected by this law. Furthermore, the increase in the compulsory schooling year from eight years to twelve years in 2012 affects our sample younger than 16. Similarly, our eldest child was 23 years old in 2012 and s\he had already completed or had not completed the high school. The same thing is valid for children whose ages are higher than 16 because they were older than or equal to 15 years old in 2012. They were already at the second grade of high school or not. The policy does not aim at these groups. In other words, the eldest target group is children who graduated from secondary school in 2012. Therefore, children younger than or equal to 16 in 2013 are affected by this education law in our sample. However, we will show that this change in the education law in 2012 does not create a structural break or any difference between children affected by policy and children who are not affected by this law in 'Data' part.

[1] We assume that age 6 is the school starting age, which is explained in 'Data' part of this thesis.

CHAPTER 4

DATA

The effect of father's death on children's educational life can be seen in a longitudinal dataset, which includes information about pre and post death conditions of households in terms of school status and family characteristics. However, there is not such a panel data for Turkey to understand the effect of father's death on the households. Instead, we use the Demographic and Health Survey (DHS, 2013) conducted by the Hacettepe University Institute of Population Studies, which collects data on the marriage history of adult women ages 15-49. Using this data set, we are able to trace the educational outcomes of children born to these women thanks to retrospective data. Therefore, we are able to see the year when marriage ended because of spouse's death, which is crucial in understanding how children's schooling is affected from that event.

Demographic Health Surveys (DHS) are conducted every five year on a large sample across Turkey to see the general trends in terms of health, population, and nutrition outcomes especially for children and mothers. The 2013 round of the survey, which is what we use in this thesis, consists of two questionnaires. The first one is about the characteristics of the household's dwelling unit and the basic demographic characteristics of usual residents and visitors. The information included are age, sex, relationship to the head of the household, education, parental survivorship and birth registration of the members of family and visitors, household characteristics such as source of drinking water, toilet facilities, cooking fuel, and assets of the household. In this part, members who are eligible for woman's interview are determined. In the first section of the questionnaire, information from 11,794 individuals are collected. In the second part of the questionnaire, ever married women are asked about background characteristics, reproductive behavior and intentions, contraception, antenatal, delivery, and postnatal care, breastfeeding and nutrition, children's health,

status of women in the family. This section of the questionnaire is answered by 9746 women between the ages of 15 and 49.

4.1. Father's Death

4.1.1. Cross Sectional Data

4.1.1.1. Data Structure of Cross Sectional Data

In the household questionnaire, all members of households are identified in relation to the household head as spouse, children, mother, father, grandparent, uncle, aunt and visitor. Since we basically focus on the child, we create a mother identification number by using mother's line given in the survey. Since the marriage history and ending year of marriage are given in the second part of the survey, we merge the two data sets. Since our aim is to understand the schooling outcomes of children, out of 14,967 children who are identified with respect to their mothers, we select 10,332 children between ages of 6 and 24. The upper age limit is chosen as 24 since we try to create a sample which includes as many observations as possible. By doing so, we try to avoid keep creating a select sample. Nonetheless, the data include children who live with their mothers. Indeed, the number of children ever born to a woman is higher than the number of children we observe in our data. These children who are not home could be doing their military service, could have married and moved out of the household or moved out to set up their own households. The data set does not contain any information about them.

In terms of the operational sample we start with 10,332 observations between the ages of 6 and 24 but we use 10,241 observations in our estimations because we drop 91 observations for various reasons. Firstly, we drop three observations since the mother of two children are seen as divorced rather than widowed. The children of other eight women are dropped because the date that they lost their husbands is not known. Furthermore, we drop ten orphans from our sample since their mothers marry a second time and those children live with a step father. Since the circumstances surrounding these children are quite different, we drop them from our data set. Unfortunately, the number of such children who live with a step father is not high

enough (10 cases) to conduct a separate analysis for them. We also drop 71 non-orphans since they also live with a step father. In this way, we can compare the orphans to children with two biological parents. Moreover, we drop 33 non-orphan children because their mothers' and fathers' marriage ages are not known. Since parental marriage ages are included in our logit models, we drop these observations. At the end, our sample includes 10,197 children with their 4656 mothers.

In this study, orphans are identified as those who have lost their fathers before they reach 19 years of age. We define orphans in this way because the highest schooling outcome we consider is 12^{th} grade completion and we assume that children finish the 12^{th} grade at the latest by age 19. According to the data, there are 203 children who had lost their fathers in their childhood. This is approximately 2% of the total child population of the relevant age (6-24).

The schooling information on household members are collected in the survey by asking the respondent on the highest schooling level completed and the highest grade completed in that level. Since this study attempts to analyze whether paternal death has any impact on child school attainment, we generate categorical dependent variables that show whether or not the child has completed the 5^{th} grade, 8^{th} grade, and 12^{th} grade. Since children younger than 17 years of age are affected by the amendment made to the compulsory education law in 2012, we did not define completing 5 years, 8 years, and 12 years as primary, secondary, and high school completion. The compulsory education law in 2012 only affects children older than 11 and younger than 17 in our sample. Looking at the each analysis which are done according to dependent variables, 5^{th} grade, 8^{th} grade, and 12^{th} grade completion rates explains the which age groups are affected by the policy in each estimations. For example, for the 5^{th} grade completion rate analysis, the policy affects children older than 11 and younger than 17 in the sample. For the 8^{th} grade analysis, this policy amendment affects children older than 14 and younger than 17. For the 12^{th} grade completion rate, there is no influence of this policy on the education outcome since this analysis is done for children higher than 19. To sum up, while the 12^{th} grade

estimation is not affected by this policy change, the 5^{th} grade and 8^{th} grade estimations are affected. However, we do not expect any significant effect of this educational amendment on programs and contents of the courses for five years completion rate. Indeed, there is already high probability of completing 5^{th} grade in the sample. On the other hand, this law change may influence children who may move to another school after s\he finishes the first four or first eight years. In other words, there can be unobserved characteristics which may have an impact on schooling decision for 8^{th} grade. However, for 8^{th} grade completion rate, there is no statistical difference between children who are affected by this law and children who are not affected by this law (p=0.2891). In other words, there exists a secular trend rather than any structural break because of the 2012 law.

Another key variable for the study is the child's age at his/her father's death. We define orphan-hood in various ways; for instance, for 5^{th} grade completion, we identify children who lost their father before age 12. We want to make sure that orphan-hood comes before the completion of a given grade. The reason is the fact that we look at the effect of father's death on children education life. For instance, if a child lost his\her father when he\she was 17 years old, we do not expect that this incident would affect the 5^{th} grade completion rate.

We construct our sample looking at the highest schooling level completed and the highest grade competed of every child ages 6-24. Since we cannot see the school stating age in the data, we assume that the primary school starting age is 6. For example, we see the highest schooling level completed and the highest grade completed of 24 years old child in that way and decide whether or not this child finished 5^{th}, 8^{th}, 12^{th} grade. In this way, all observations contribute to the analysis. We take age 12, 15, and 19 as benchmark ages that represent the 5^{th}, 8^{th}, 12^{th} grade finishing ages. For instance, in order to decide whether or not one child finishes 5^{th} grade, this child should be older than 11. For instance, an eight year old child cannot complete the 5^{th} grade. Therefore, we do not consider children younger than 12 in 5^{th} grade completion analysis. For the 8^{th} grade, children younger than 15 cannot

possibly finish this grade level and therefore, we do not consider this group in our 8th grade completion rate analysis. Finally, children older than 18 are taken into account for the 12th grade completion analysis because of the same reason explained for other cases. Hence, in our cross sectional data, we consider children ages 12-24, 15-24, and 19-24 for the analysis of 5th, 8th, and 12th grade completion rates, respectively.

4.1.1.2. Descriptive Statistics of Cross Sectional Data

Figure 4.1 shows the percentage of children (over population) who have lost their father on or before a given age. For instance, 0.3% of children ages 0-6 lost their fathers at or before age 6. The highest percentage of orphans is observed among 18 year old children, which is quite expected because the risk of losing a parent increases as time goes by. In other words, 18 years of children have more time to face this incident compared to younger children like 6 year old children. Hence, it can be good to look at the next graph (Figure 4.2) which demonstrates the percentage of orphans by the age at which children lost their father.

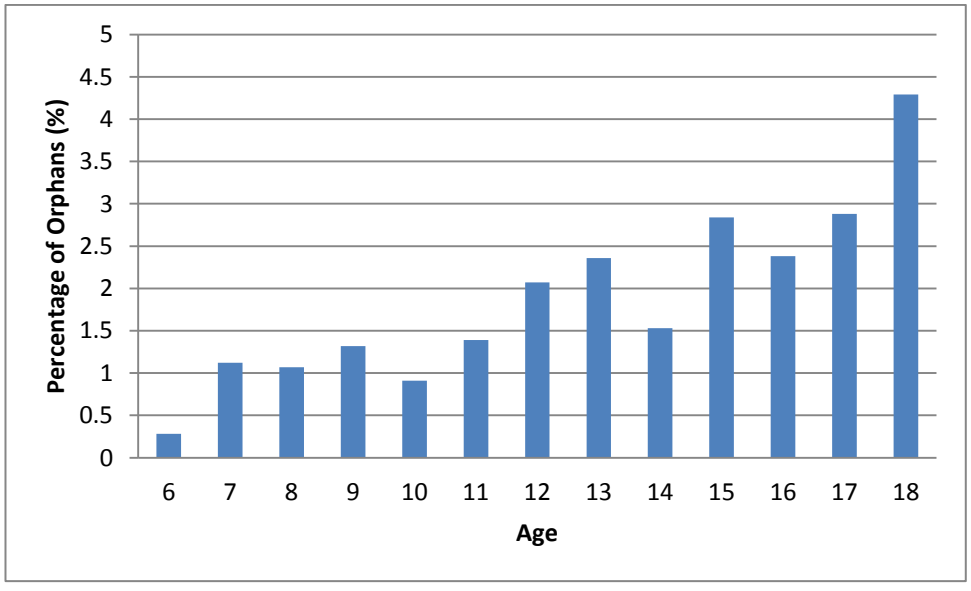

Figure 4. 1: Percentage of Children who have lost their father by age

Figure 4.2 indicates the percentage of orphans (over total orphans) by the age at which children lost their father. The likelihood of experiencing the event (the death of the father) at any given age changes between 4% to 8%. In other words, the possibility that children experience the death of their fathers at any age appears to be random. Figure 4.3 also shows the percentage of orphans (over total population) by the age at which children lost their father.

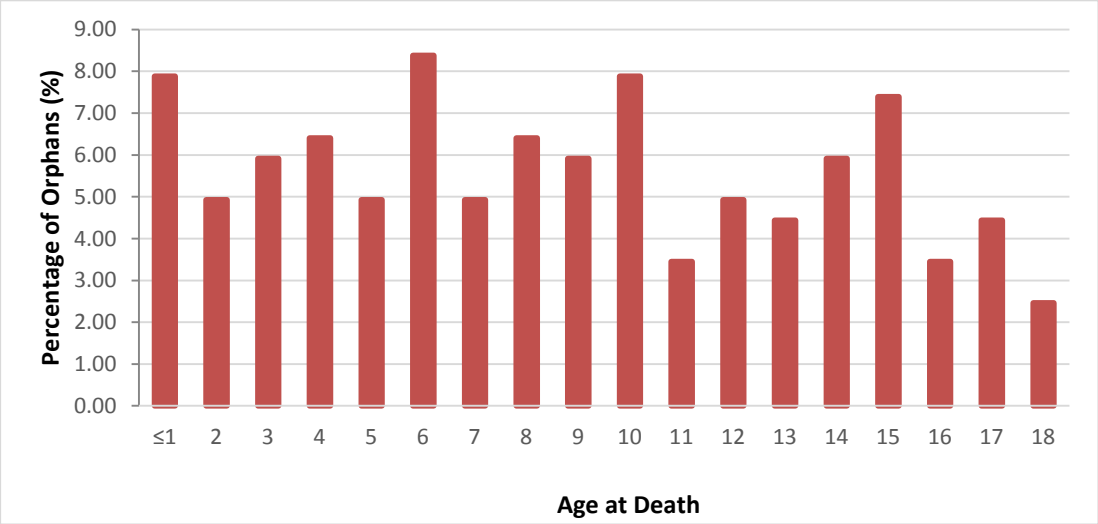

Figure 4. 2: Percentage of Orphans (over orphans) by age at which children lost their father

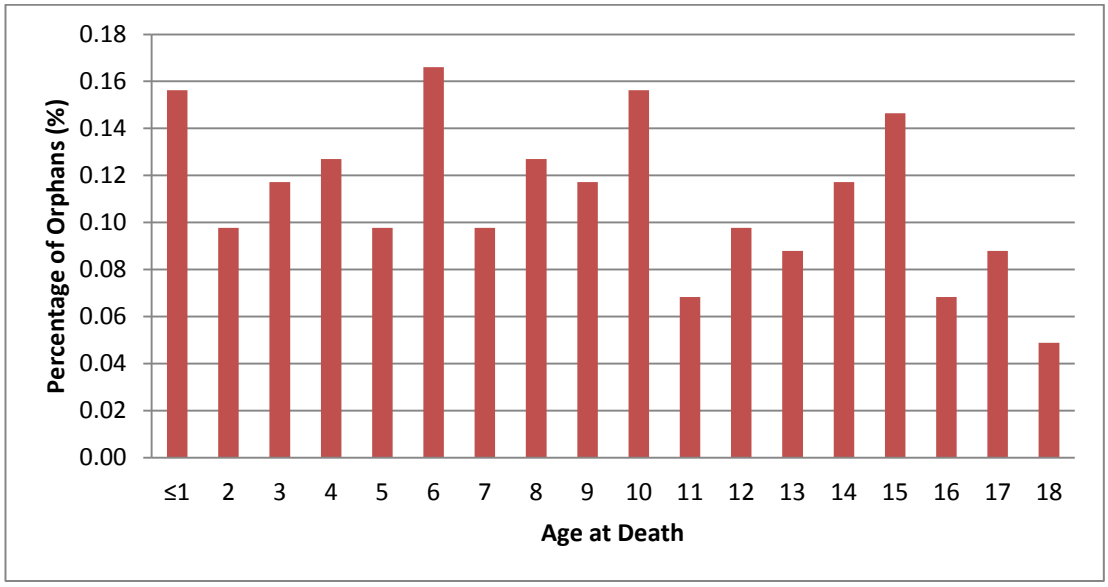

Figure 4. 3: Percentage of Orphans (over total population) by age at which children lost their father

Next, we want to present the percentage of children experiencing father's death by age for girls and boys to figure out the timing of father's death for our sample. For instance, among 203 orphans, 13.30% of orphans are girls and lost their fathers before they reached 6. The ratio is 16.75% for boys who lost their fathers at or before the age 6. Among 203 children who lost their fathers before age 18, approximately 30% lost their fathers when they were younger than 6 years of age. About 37% faced paternal death between the ages 6 and 11. The percentage of children who lost their fathers at ages 12-14 is nearly 16%.

Table 4. 1: The proportion of children experiencing father's death by age

Age at death (%)	N	Orphans		
		Girls	Boys	Total
Age at death≤5	61	13.30	16.75	30.05
6≤Age at death≤11	75	19.21	17.73	36.95
12≤Age at death≤14	31	8.87	6.40	15.27
15≤Age at death≤18	36	9.85	7.88	17.73

Table 4.2 represents the information about the education status of children, their fathers' and mothers' characteristics such as their age, education, employment status, and sectors of employment (Table 4.2). The characteristics of children are given separately for girls and boys and by orphan-hood. To reiterate, orphans are those who have lost their father before age 19.

Table 4. 2: General Characteristics of Orphans vs. Non Orphans

	Orphans									Non Orphans								
Variables		**Girls**			**Boys**			**Total**			**Girls**			**Boys**			**Total**	
	N	**Mean**	**S. D.**	**N**	**Mean**	**S. D.**	**N**	**Mean**	**S. D.**	**N**	**Mean**	**S. D.**	**N**	**Mean**	**S. D.**	**N**	**Mean**	**S. D.**
Education																		
Completed Years of Schooling	101	8.17	3.51	99	7.41	3.18	200	7.80	3.36	4667	6.07	3.88	5188	6.32	3.74	9855	6.20	3.81
5th Grade Completion (%) (Age≥12), (6≤Age_at_death≤11)	28	0.96	0.19	27	1.00	0.00	55	0.98	0.13	2741	0.97	0.18	3171	0.98	0.12	5912	0.98	0.15
8th Grade Completion (%) (Age≥15), (6≤Age_at_death≤14)	28	0.93	0.26	26	**0.85**	0.37	54	**0.89**	0.32	1683	0.90	0.30	2138	**0.94**	0.23	3821	**0.93**	0.26
12th Grade Completion (%) (Age≥19), (6≤Age_at_death≤18)	20	**0.50**	0.51	18	**0.11**	0.32	38	**0.32**	0.47	633	**0.53**	0.50	994	**0.36**	0.48	1627	**0.42**	0.49
Personal Characteristics																		
Age	104	15.39	4.18	99	15.06	4.59	203	15.23	4.38	4741	12.89	4.65	5253	13.47	4.96	9994	13.19	4.83
Urban (%)	104	0.60	0.49	99	0.65	0.48	203	0.62	0.49	4741	0.69	0.46	5253	0.69	0.46	9994	0.69	0.46
Number of Sibling	104	2.09	1.35	99	2.01	1.23	203	2.05	1.29	4741	2.48	1.89	5253	2.28	1.79	9994	2.37	1.84
Birth Place																		
Province (%)	104	0.33	0.47	99	0.44	0.50	203	0.38	0.49	4741	0.43	0.49	5253	0.42	0.49	9994	0.42	0.49
District (%)	104	0.28	0.45	99	0.19	0.40	203	0.24	0.43	4741	0.25	0.43	5253	0.25	0.43	9994	0.25	0.43
Village (%)	104	0.39	0.49	99	0.36	0.48	203	0.38	0.49	4741	0.32	0.47	5253	0.33	0.47	9994	0.33	0.47
Wealth Status (%)																		
Poorest	104	0.23	0.42	99	0.30	0.46	203	0.27	0.44	4741	0.29	0.45	5253	0.29	0.45	9994	0.29	0.45
Poorer	104	0.40	0.49	99	0.26	0.44	203	0.33	0.47	4741	0.23	0.42	5253	0.23	0.42	9994	0.23	0.42
Middle	104	0.21	0.41	99	0.28	0.45	203	0.25	0.43	4741	0.18	0.39	5253	0.19	0.39	9994	0.19	0.39
Rich	104	0.15	0.36	99	0.15	0.36	203	0.15	0.36	4741	0.30	0.46	5253	0.29	0.45	9994	0.30	0.46
Mother's Characteristics																		
Age	104	42.33	4.93	99	41.74	5.10	203	42.04	5.01	4741	38.11	5.76	5253	38.38	5.92	9994	38.25	5.85
Mother's Marriage Age	104	19.61	4.47	99	19.28	3.98	104	19.61	4.47	4741	19.79	3.72	5253	19.70	3.65	9994	19.74	3.68
Mother's Schooling (%)																		
No education	104	0.31	0.46	99	0.27	0.45	203	0.29	0.46	4741	0.28	0.45	5253	0.30	0.46	9994	0.29	0.45
Primary	104	0.59	0.49	99	0.66	0.48	203	0.62	0.49	4741	0.52	0.50	5253	0.50	0.50	9994	0.51	0.50
Secondary	104	0.04	0.19	99	0.01	0.10	203	0.02	0.16	4741	0.07	0.26	5253	0.07	0.25	9994	0.07	0.26
Higher	104	0.07	0.25	99	0.06	0.24	203	0.06	0.25	4741	0.13	0.34	5253	0.13	0.33	9994	0.13	0.33
Father's Characteristics																		
Father's Marriage Age	104	26.03	7.50	99	25.07	8.20	203	25.56	7.84	4741	24.26	4.75	5253	24.17	4.68	9994	24.21	4.72
Father's Schooling (%)																		
No education	104	0.14	0.35	99	0.14	0.35	203	0.14	0.35	4741	0.09	0.29	5253	0.10	0.30	9994	0.10	0.30
Primary	104	0.64	0.48	99	0.60	0.49	203	0.62	0.49	4741	0.52	0.50	5253	0.51	0.50	9994	0.52	0.50
Secondary	104	0.09	0.28	99	0.11	0.29	203	0.10	0.30	4741	0.14	0.34	5253	0.14	0.34	9994	0.14	0.34
Higher	104	0.13	0.33	99	0.15	0.36	203	0.14	0.35	4741	0.25	0.43	5253	0.25	0.43	9994	0.25	0.43

The summary statistics given in Table 4.2 suggest that the average age of orphans is 15, whereas non orphans are approximately 13. 62% of the orphans live in urban areas. This rate is 69% among non-orphans. The number of siblings who live at home is about 2 for both orphans and non-orphans.

In children educational outcomes, the first variable we consider is completed school years. Unfortunately, we cannot see any meaningful result from this variable mainly because completed school years depend on age. As noted earlier, children who lost their father are older than those who did not. Therefore, we investigate the schooling outcomes of children by age groups (Table 4.4). If completed schooling years are more than or equal to 5 years, it can be said that the child has finished the 5^{th} grade. When we investigate the 5^{th} grade completion, we restrict our data to children older than 11. To reiterate, we assume that the school starting age is 6 and we expect that children should finish the 5^{th} grade by the end of age 12. In comparing the schooling outcomes of orphans and non-orphans, the age at which the child experiences this event is also important. We make sure that the death of father had happened before age 12 when analyzing the 5^{th} grade school completion. To reiterate, the orphan-hood is defined to include children who lost their fathers before the age of 12 for the 5^{th} grade completion. Children are categorized as orphans if they lost their fathers before the age of 15 and 19 for the 8^{th} grade and 12^{th} grade completion, respectively. At the mean, we observe that nearly all children older than 11 have completed the 5^{th} grade. In fact, the 5^{th} grade completion rate for the orphans is the same as non-orphans.

The 8^{th} grade completion rate is lower for orphans, which is 89%, as compared to non-orphans for whom we observe an average completion rate of 93%. The 8^{th} grade completion rate is 3 percentage point higher for female orphans compared to female non-orphans, while this rate is 9 percentage point lower for male orphans compared to male non-orphans (The difference is statistically significant, $p= 0.0119<0.05$ for boys who completed 5^{th} grade). In addition, this difference is statistically significant when the analysis is redone for urban and rural boys who have completed the 5^{th} grade. The difference between orphans and non-orphans are higher among males

living in urban areas. A reason for this can be the higher likelihood that boys assume the responsibility of their deceased fathers in traditional Turkish family settings. The 12^{th} grade completion rate drops both for children who have and have not lost their fathers. The 12^{th} grade completion rate is estimated at 11% for male orphans, but at 36% for non-orphans (The difference is statistically significant, $p= 0.0309<0.05$ for male orphans). The difference is also significant for urban boys who finish the 8^{th} grade (The difference is statistically significant, $p= 0.0264<0.05$ for urban and male orphans). In other words, this difference is both statistically significant for boys and urban boys.

Next, we analyze the parental and household characteristics of children who have and have not lost their fathers. From mother's education information, it can be easily noticed that the education level is generally low for orphans and non-orphans. Indeed, more than a half of the mothers in both groups are primary school (5-years) graduates. The average primary school completion rate of orphans' mothers, which is 62%, is higher than that of non orphans' at 51% (The difference is statistically significant, $p=0.0018<0.01$). Additionally, roughly 30% of the mothers of both groups have no education. The situation is worse when the education degree increases. Only 6% of the mothers have higher education (high school-12years or university) among orphans. This ratio increases a little for non-orphans' mothers (13%) (The difference is statistically significant, $p= 0.0062<0.05$).

From father's education information, it can be easily noticed that education level is generally low for orphans and non-orphans but higher than that of mothers. Among orphans and non-orphans, the proportion of fathers without an education is 14% and 10%, which is less than that of mothers of both groups (30%), (The difference is statistically significant, $p= 0.0037<0.1$). Approximately half of both groups are primary school (5-years) graduates. The average primary school completion rate of orphans' fathers, which is 62%, is higher than that of non-orphans' fathers which is 52% (The difference is statistically significant, $p= 0.0037<0.01$). The secondary school (eight years) completion rate of orphans' fathers, which is 10%, is less than

that of non-orphans' fathers which, is 14%. When compared to mothers' secondary school completion rates, fathers have competed higher levels of education. Only 14% of the fathers of orphans have higher education. This rate increases for non-orphans' fathers to 25% (The difference is statistically significant, p= 0.0003<0.01).

Table 4. 3: Education Completion Rate[2]

	Orphans										Non Orphans								
Variables	Girls			Boys			Total				Girls			Boys			Total		
	N	Mean	S. D.	N	Mean	S. D.	N	Mean	S. D.		N	Mean	S. D.	N	Mean	S. D.	N	Mean	S. D.
Education																			
5th Grade Completion (%) (Age≥12), (6≤Age_at_death≤11)	28	0.96	0.19	27	1.00	0.00	55	0.98	0.13		2741	0.97	0.18	3171	0.98	0.12	5912	0.98	0.15
8th Grade Completion (%) (Age≥15), (6≤Age_at_death≤14)	26	1.00	0.00	26	**0.85**	0.37	52	**0.92**	0.27		1621	0.94	0.24	2113	**0.95**	0.21	3734	**0.95**	0.23
12th Grade Completion (%) (Age≥19), (6≤Age_at_death≤18)	18	**0.56**	0.51	16	**0.13**	0.34	34	**0.35**	0.49		562	**0.60**	0.49	935	**0.38**	0.49	1497	**0.46**	0.50

To analyze the difference in completed years of schooling, we classify orphans with respect to their age. In table 4.4, the difference in completed years of schooling compared between orphans and non-orphans at different ages. Doing a comparison at single ages is not very fruitful because of small sample sizes. However, we observe that between the age of 15-19 and 19-24, the average years of education is lower for orphan boys compared to non-orphan boys.

Table 4. 4: Completed Years of Schooling by Age

	Orphans										Non Orphans								
Variables	Girls			Boys			Total				Girls			Boys			Total		
	N	Mean	S. D.	N	Mean	S. D.	N	Mean	S. D.		N	Mean	S. D.	N	Mean	S. D.	N	Mean	S. D.
Completed Years of Schooling																			
6≤Age≤11	30	8.23	2.91	31	7.74	1.79	61	7.98	2.40		3050	8.27	2.83	3537	8.40	2.47	6587	8.34	2.65
12≤Age≤14	18	6.89	1.02	14	6.93	1.14	32	6.91	1.06		1048	6.80	1.37	1027	6.84	1.16	2075	6.82	1.27
15≤Age≤19	24	9.58	2.45	21	**9.19**	1.86	45	9.40	2.18		1217	9.32	2.20	1365	**9.35**	1.70	2582	9.33	1.95
19≤Age≤24	26	10.81	3.09	23	**9.78**	2.26	49	**10.33**	2.75		573	10.67	3.36	901	**10.25**	2.47	1474	**10.42**	2.85
Age=12	4	6.00	0.82	10	6.20	0.79	14	6.14	0.77		334	5.87	1.07	360	5.96	0.89	694	5.92	0.98
Age=15	8	9.13	0.83	9	8.56	0.88	17	8.82	0.88		270	8.42	1.45	309	8.39	1.06	579	8.40	1.26
Age=19	6	11.50	0.55	6	**9.67**	1.63	12	10.58	1.51		165	9.96	2.89	218	**10.06**	1.76	383	10.02	2.31
Age=22	2	11.00	2.83	5	11.40	2.19	7	11.29	2.14		82	11.10	4.06	167	10.42	2.84	249	10.64	3.30

[2] 8th grade completion rate is calculated among children who finish 5th grade and 12th grade completion rate is calculated among children who finish 8th grade in that table.

To analyze the effect of the timing of death on school attainment, we classify orphans with respect to age at which they experienced the passing away of their father.

Table 4. 5: 5th Grade Completion-Orphans by Child's age when father passed away

	Orphans								
5th Grade Completion (%)		**Girls**			**Boys**			**Total**	
	N	**Mean**	**S. D.**	**N**	**Mean**	**S. D.**	**N**	**Mean**	**S. D.**
Age at death≤5	19	1.00	0.00	20	1.00	0.00	39	1.00	0.00
6≤Age at death≤11	28	0.96	0.19	27	1.00	0.00	55	0.98	0.13
Age at death≤11	47	0.98	0.15	47	1.00	0.00	94	0.99	0.10

Table 4. 6: 8th Grade Completion-Orphans by Child's age when father passed away

	Orphans								
8th Grade Completion (%)		**Girls**			**Boys**			**Total**	
	N	**Mean**	**S. D.**	**N**	**Mean**	**S. D.**	**N**	**Mean**	**S. D.**
Age at death≤5	14	1.00	0.00	14	0.93	0.27	28	0.96	0.19
6≤Age at death≤14	28	0.93	0.26	26	0.85	0.37	54	0.89	0.32
Age at death≤14	42	0.95	0.22	40	0.88	0.33	82	0.91	0.28

Table 4. 7: 12th Grade Completion-Orphans by Child's age when father passed away

	Orphans								
12th Grade Completion (%)		**Girls**			**Boys**			**Total**	
	N	**Mean**	**S. D.**	**N**	**Mean**	**S. D.**	**N**	**Mean**	**S. D.**
Age at death≤5	6	0.50	0.55	5	0.40	0.55	11	0.45	0.52
6≤Age at death≤11	6	0.67	0.52	7	0.00	0.00	13	0.31	0.48
12≤Age at death≤14	4	0.50	0.58	6	0.17	0.41	10	0.30	0.48
15≤Age at death≤18	10	0.40	0.52	6	0.17	0.41	16	0.31	0.48
6≤Age at death≤18	20	0.50	0.51	18	0.11	0.32	38	0.32	0.47

In this set of tables, what we want to illustrate is whether the timing of father's death affects child's schooling. Therefore, we consider how school completion changes with the timing of father's death. In table 5, we observe that if the child's father passed away before the child was 6 years old, 5th grade completion rate for this group of children is 100%. However, if the father of the child passes away when the child was between ages 6-11, the 5th grade completion rate drops to 98%. For instance, in

table 6, 8th grade completion rate is 96% if child's father died before the child was 6 years old. This rate decreases to 89% if the father of the child passes away when the child was between ages 6-11. In the long-run, families are more likely to adjust to this loss. It appears that short-term effects of death are likely to be more acute than long-term effects. This trend is also observed in the 12th grade completion rates as it can see from the tables above. However, it is not fruitful to look at these numbers since the number of observations is very small for orphans older than 18. This fact gives us motivation to investigate the effects of father's death by creating two categories as father's death at preschool ages and father's death during school ages. So that we can observe the impact of the timing of death in the estimation part, if there is any.

In the following three tables, we study whether we can analyze the schooling outcomes of orphans and non-orphans by place of residence. In regards to the analysis of the 5th grade completion rate, Table 4.8 shows that almost all children complete the 5th grade, and our explanatory variable, fatherdied dummies, does not vary in outcome. Hence, we cannot answer the question of whether or not father's death has any effect on children's 5th grade completion rate. However, this is not an important drawback for our analysis since almost all children in our data set complete the 5th grade.

Table 4. 8: The number of observations, Orphans vs. Non-orphans, 5th Grade

5th Grade		Non-orphans	Orphans	
			fatherdied6_11	fatherdied0_11
Urban boy	completed	2159	17	32
	not completed	26	0	0
Urban girl	completed	1847	15	28
	not completed	42	0	0
Rural boy	completed	964	10	15
	not completed	22	0	0
Rural girl	completed	801	12	18
	not completed	51	1	1

Table 4.9 demonstrates us the situation for the 8th grade completion rate. We understand that the analysis can only be done for boys, urban residents, and urban-boy groups. There is no one in urban-girl and rural-girl groups who are orphans yet do not complete the 8th grade.

Table 4. 9: The number of observations, Orphans vs. Non-orphans, 8th Grade

8th Grade		Non-orphans	Orphans	
			fatherdied6_14	fatherdied0_14
Urban boy	completed	1408	14	25
	not completed	59	2	3
Urban girl	completed	1103	15	26
	not completed	50	0	0
Rural boy	completed	608	8	10
	not completed	38	2	2
Rural girl	completed	416	1	14
	not completed	52	0	0

Table 4.10 demonstrates us the situation for the 12th grade completion rate. In fact, the analysis can be done for boys, girls, urban, and urban-boy, rural-boy, and urban-girl groups. However, in rural-girl group, the number of observations do not allow for a separate analysis.

Table 4. 10: The number of observations, Orphans vs. Non-orphans, 12th Grade

12th Grade		Non-orphans	Orphans	
			fatherdied6_18	fatherdied0_18
Urban boy	completed	281	1	3
	not completed	384	10	13
Urban girl	completed	264	9	9
	not completed	149	7	12
Rural boy	completed	72	1	1
	not completed	198	4	4
Rural girl	completed	74	1	1
	not completed	75	1	2

4.1.2. Longitudinal Data

4.1.2.1. Data Structure of Longitudinal Data

As an alternative estimation strategy, we create a longitudinal data set by expanding every child according to his/her age until age 24 or the latest age that the child is observed in the data. Age 6 is set as the school starting age and all analyses depend on this assumption in the duration analysis. We use the same cross sectional data which includes all observations ages 6-24. The observations are expanded by (age-6+1) times since the school starting age is assumed to be 6. So, we can observe all children through time. We employ duration analysis where time to an event is analyzed. The dependent variable in this model is the dropout status which is a dummy variable taking the value of 1 if the child continues his\her education and zero otherwise. We relate the death of father to dropping out of school. Time starts ticking at age 6 for all children and ends when the child drops out of school. In this thesis, if a child finishes one school level and does not continue to the next school level, s/he is counted as a dropout. For instance, a boy who is 11 years old in 2013 is observed six times starting from the age of 6 which is the school start age in our analysis. If the completed year of schooling is four, the drop out status of this boy at ages 6, 7, 8, 9 is zero. He is expected to be at school at age 10 but is not. Therefore, the drop out status takes the value of 1 at this age showing that this child dropped out of school at age 10. If the same child had 6 years of schooling, the drop out status of the child would be recorded as zero at all ages of this child. In the expanded data set, there are 66,760 observations coming from individuals aged 6 to 24.

As it is shown in Table 4.11, dropout rates differ for orphans and non-orphans. 9% of orphans have dropped out while this rate is 5% for non-orphans ages 6-19 (The difference is statistically significant, $p= 0.0069<0.01$ and $p=0.0001<0.01$ for boys and girls, respectively). However, since the age of orphans is higher than non-orphans, the analysis should be done by age groups to capture the effects on drop outs.

Looking at the dropout rates for different age groups overcomes the problem of small sample size. In fact, consistent with our cross sectional data, between the ages of 12-14, the school dropout rates is 14% for male orphans which is slightly higher than the rates observed for male non-orphans (11 percentage). However, the difference is not statistically significant. Similarly, the difference is not statistically significant for girls and the total of children. Between the ages of 15-19, the school dropout rate is 26% for orphans which is slightly higher than the rates observed for non-orphans (23 percentage), (The difference is statistically significant, p=0.0533 <0.1 for urban boys who lost their fathers when they were ages 6-14).

Table 4. 11: Dropouts: Orphans vs. Non Orphans-Age Groups

	Orphans										Non Orphans								
Variables		**Girls**			**Boys**			**Total**				**Girls**			**Boys**			**Total**	
	N	**Mean**	**S. D.**	**N**	**Mean**	**S. D.**	**N**	**Mean**	**S. D.**		**N**	**Mean**	**S. D.**	**N**	**Mean**	**S. D.**	**N**	**Mean**	**S. D.**
Dropout (%)																			
6≤Age≤11	243	0.00	0.06	273	0.02	0.15	516	0.01	0.12		21662	0.02	0.14	24802	0.02	0.13	46464	0.02	0.13
12≤Age≤14	127	**0.10**	0.30	110	**0.14**	0.34	237	**0.12**	0.32		5675	**0.08**	0.27	7198	**0.11**	0.31	12873	**0.10**	0.29
15≤Age≤19	108	**0.25**	0.44	67	**0.28**	0.45	175	**0.26**	0.44		2976	**0.20**	0.40	3454	**0.26**	0.44	6430	**0.23**	0.42
6≤Age≤19	478	**0.09**	0.28	450	**0.09**	0.28	928	**0.09**	0.28		30313	**0.05**	0.21	35454	**0.06**	0.24	65767	**0.05**	0.23

4.1.3. Selection Bias

Selection bias can be defined as the selection of some individuals from population. This prevents proper randomization since the sample is not representative of the population. This problem may distort the statistical analysis and lead to unreliable results. In our analysis, the method by which data are collected can lead to selection bias. The problem is that the Demographic Health Survey (DHS) collects information on children who normally live at home. That is, we cannot see the educational attainment of the children who have left home. This is important for high school completion since the analysis is done on individuals older than 18. However, in the data, we can only observe children who are at home and this can create a selection bias.

Since father's death can lead to many problems such as psychological and financial difficulties, children's decision to leave home can be also affected from this incident. For instance, children may leave home because boys could go under military service and girls may marry. On the other hand, boys may take over their father's roles and girls may not have enough resources to get married. As a consequence, they may be at home. In the previous part, we have investigated the education statues of children and looked at whether orphans and non-orphans differ on the basis of key individual and household characteristics. In this section, we investigate the potential size of the problem of 'missing children' by looking at the reproductive behavior of women and observe the number of children they have had. We expand the data by adding in the 'missing children' less than 25 years of age in 2013. We assume that children can leave home after they reach age 14.

The data suggest that out of 15,683 children 1,069 children left home after age 14[3]. They constitute 6.82% of the children population ages 6-24. Males and females compose of 2.43% 4.39% of the total population, respectively. Table 4.12 gives the prevalence of leaving home for both orphans and non-orphans. When we look at the average leaving home rates, it is higher for orphan boys at 24% for children older than 14, than non-orphans (13%). For children older than 18, the difference between orphans and non-orphans still exist due to boys' behavior. The average leaving home rates is higher for non-orphan girls at 25% for children older than 14, than orphans (22%). For girls older than 18, the difference between orphans and non-orphans disappears. We carry out t-test to decide whether these differences are statistically significant or not. The results suggest that there is no meaningful difference between orphans and non-orphans' leaving home rates if the father of the child passed away when the child was younger than 14. However, if the father passed away before the child was 6 years of age, t-test results are significant between male orphans and non-orphans older than 14 and 18 (The difference is statistically significant, $p= 0.0011<0.01$ & $p=0.0036<0.01$, respectively). These results suggest that

[3] We do not consider the children of guest women in our sample since they are not in our target population. In order to be in the target population, children must be a usual resident. Therefore, 54 observations are dropped from our sample.

experiencing father's death in pre-school age may increase the likelihood of children's leaving home at later ages. Since these children are not in home and we do not know their educational attainment, we do not see any significant negative effect of father's death on children' school completion ratios if they lost their fathers when they younger than 7. However, we have small number of orphans in that situation; we do not expect that absent children create a serious selection bias problem.

Table 4. 12: Leaving Home

	Orphans									Non Orphans								
Variables	Girls			Boys			Total			Girls			Boys			Total		
	N	Mean	S. D.	N	Mean	S. D.	N	Mean	S. D.	N	Mean	S. D.	N	Mean	S. D.	N	Mean	S. D.
Leaving Home, Age_at_death≤14, Age≥14	58	0.22	0.42	49	**0.24**	0.43	107	**0.23**	0.43	2719	0.25	0.43	2851	**0.13**	0.33	5570	**0.19**	0.39
Leaving Home, Age_at_death≤14, Age≥18	32	0.41	0.50	28	**0.39**	0.50	60	**0.40**	0.49	1488	0.41	0.49	1584	**0.21**	0.41	3072	**0.30**	0.46
Leaving Home, Age_at_death≤6, Age≥14	23	**0.35**	0.49	22	**0.36**	0.49	45	**0.36**	0.48	2719	**0.25**	0.43	2851	**0.13**	0.33	5570	**0.19**	0.39
Leaving Home, Age_at_death≤6, Age≥18	15	**0.53**	0.52	13	**0.54**	0.52	28	**0.54**	0.51	1488	**0.41**	0.49	1584	**0.21**	0.41	3072	**0.30**	0.46

4.2. Data-Intergenerational Transmission of Education

As in the first part of this 'Data' chapter, we use the Demographic and Health Survey (DHS, 2013) conducted by the Hacettepe University Institute of Population Studies, which collects data on personal and family characteristics of adult women ages 15-49. Using this data set, we are able to trace the linkage between educational outcomes of children and their parents. Furthermore, we are able to see the education attainments of mother's parents, which is crucial information to observe the effects of parental education on children in the two-stage framework. In this light, the association of education attainment between children and children's parents will be examined in the first stage. In the second stage, the association of education attainment between children's mothers and children's grandparents will be also examined. Therefore, we can see whether or not the relationship between children's education and parents' education has weakened over time thanks to the data which includes the education information of three generations. To be more precise, these three generations are children, children's parents, and children's grandparents.

In the household questionnaire, all members of households are identified in relation to the household head as spouse, children, mother, father, grandparent, uncle, aunt and visitor. Since we basically focus on the child, we create a mother identification number by using mother's line given in the survey. Since the family information of children's mothers is given in the second part of the survey, we merge the two data sets. Our aim is to understand the intergenerational transmission of education in three generations, out of 14,967 children who are identified with respect to their mothers, we select 6,519 children between ages of 12 and 24. The upper age limit is chosen 24 since we try to create a sample which includes as many observations as possible.

In terms of the operational sample we start with 6,519 observations between the ages 12-24 but we use 6,101 observations in our estimations because we drop 418 observations. We drop 82 children since they live with a step father. Since father's education information comes from the husband's background questionnaire, current husbands of mothers may not be children's biological fathers. Therefore, education information of current husbands may not belong to children's fathers' education information. For instance, if women got divorced or lost their husbands and married again, the education outcomes of current husbands of these women cannot be taken as children's biological father's education data. Unfortunately, there is no information about biological fathers of these children living with a stepfather. On the other hand, if women got divorced or lost their husbands and do not marry again, the information of husbands' education belongs to the children's biological fathers. Hence, we have to drop 82 observations and make sure that every child has her\his father's education information. In this way, we see the all effects of parent's education on children since education of fathers also reflect some genetic qualities transmitted from parents to children. In fact, we want to split up the total effects as education and IQ and make stepfather analysis for a nature/nurture argument. However, the number of children living with a step father is insufficient to conduct a proper analysis. Furthermore, mother ages of 21-28 are also dropped out our sample since they are affected by both 2005 four-year high school law and 1997 eight-year compulsory schooling law. The 1997 eight-year compulsory schooling law affects

our mothers younger than 28. For instance, the woman whose age is 27 in 2013 was eleven years old in 1997. She probably finished the 5^{th} grade or in the 4^{th} grade of her education and had to continue to her education owing to this law. This woman constitutes the first group affected by this law. Furthermore, in 2005, the years of high school education increased from three years to four years. Therefore, we adjust our data with respect to this fact. The 2005 law affect our observations younger than 24. For instance, 22 years old woman in 2013 was 14 years old in 2005 and have to finish four years of high school education if she was in high school already. On the other hand, 24 years old woman in 2013 was 18 years old in 2005. They were probably out of school either as high school graduates or not. There are 2 mothers ages of 21, 3 mothers ages of 22, 15 mothers ages of 23, 28 mothers ages of 24, 44 mothers ages of 25, 106 mothers ages of 26, and 138 mothers ages of 27. Totally, 336 children and 289 mothers are dropped. At the end, our sample includes 6,101 children with their 3204 mothers, fathers, and grandparents. We think that this does not create a problem since we have enough number of observations at the end. Moreover, we are sure that mother's education is not affected by any change in education law.

In the first analysis, we look at the relationship between mother's education (children's mothers) and their parents' educational attainments (children's grandparents). Mothers' primary (5-years), secondary (8-years), and high school (11-years) completion rates are used as dependent variables in the analysis. The primary completion rates mean that these women must have finished the 5^{th} grade. For secondary school and high school completion rates, these women must have finished the 8^{th} and 11^{th} grade. Mother's education in the data set has already categorical form. However, the categories do not differentiate from high school to university education. So, we use completed years of schooling of mothers to make our own categorical form for mother's education. For instance, if mother have eight years of education, they are considered as secondary school graduates. Since, mothers are age of 28-49, we do not impose any age restrictions by doing the analysis. Our all

observations contribute to the primary, secondary, and high school completion rate analysis.

As main explanatory variables grandmothers and grandfather's education variables are also categorical in the data and represent the primary, secondary, and high school graduate in the first analysis.

In the second analysis, we look at the relationship between children's education and their parents' education. The method we use to construct the data is the same as in the first chapter of this thesis. The schooling information on children members are collected in the survey by asking the respondent on the highest schooling level completed and the highest grade completed in that level. Since this study attempts to analyze intergenerational transmission of education among three generations, we generate categorical dependent variables that show whether or not the child has completed the 5^{th} grade, 8^{th} grade, and 12^{th} grade.

We construct our sample looking at the highest schooling level completed and the highest grade completed of every child ages 12-24. Since we cannot see the school stating age in the data, we assume that the primary school starting age is 6. For example, we see the highest schooling level completed and the highest grade completed of 24 years old child in that way and decide whether or not this child graduate from primary, secondary and high school graduate. In this way, our all observations contribute the analysis. We take the age 11, 14, and 18 as benchmark ages that represent the 5^{th}, 8^{th}, and 12^{th} grades completion ages. For instance, in order to decide whether or not a child finish 5^{th} grade, this child should be older than 11. For instance, an eight-year old child is not eligible to complete the 5^{th} grade. Therefore, we do not consider children younger than 12 in the 5^{th} grade completion analysis. For the 8^{th} grade completion rate, children younger than 15 are not eligible and we do not take this group in our 8^{th} grade completion rate analysis. Finally, children older than 18 are taken into the 12^{th} grade completion analysis because of the same reason explained in other cases. Hence, in our cross sectional data, the

children ages 12-24, 15-24, and 19-24 contribute the analysis of the 5^{th} grade, 8^{th} grade, and 12^{th} grade completion rates, respectively.

Similar to the selection bias problem in the subject of the effects of paternal loss, the same problem is also valid for the 12^{th} grade completion analysis for girls. Girls may be out of home because of marriage or attending a college. Therefore, this can create over or under estimation of our results. Since data set does not contain any information about children who are not home, we try to overcome this challenges in future researches by considering, for example, marriage age of girls.

4.2.1. Descriptive Statistics of the First Analysis: Mothers - Mothers' Parents

In the first analysis, we use the education information of children's mothers and children's grandparents. Our aim is to understand whether or not educated parents have a positive influence on mothers' education outcomes or poor educational background of their parents pose an obstacle for mothers. In other words, the models which measure the association between children's mothers and children's grandparents are the first stage of the estimation. In table 4.13, the general characteristics of women whose ages 28-49 are given.

From educational background, the first three row of Table 4.13 show the school completion rates of mothers at each level. 70% of mother finish primary school (5-years), whereas 17% of mother finish secondary (8-years) school. The average high school (11-years) completion rate is 10%. These are the completion rates, not distribution of mother's education levels. The distribution of mother's education levels can be also seen via the same table. While 30% of mother are uneducated, 2% of them are university graduates. The average age of mothers is 41 and 42% live in urban areas when they were 12 years old. Furthermore, nearly 18% of women were born in province and district, whereas 62% were born in village. In addition, the average sibling number of these mothers is quite high, which is 6.

As it concerns mothers' mother's education information, it can be easily noticed that the education level is generally low. Indeed, 80% of the mothers' mother's have no education. The average primary school completion rate is 18%. Additionally, roughly 1% of the mothers' mother's graduate from secondary, which is quite low.

From mothers' father's education information, it can be easily noticed that education level is again generally low but higher than that of mothers. The proportion of mothers' fathers without an education is 50%, which is less than that of mothers' mothers (80%). Approximately half of mothers' fathers are primary school graduates. The average primary school completion rate of mothers' fathers, which is 44%, is higher than that of mothers' mothers which is 18%. The secondary and high school completion rate of mothers' fathers is 3%. The university school completion rate is 1% for mothers' fathers.

Table 4. 13: General Characteristics of Mothers whose ages of 28-49

	Mothers whose ages 28-49		
Variables		**Total**	
	N	**Mean**	**S. D.**
Education (Completion Rates)			
Primary School Completion (%)	6101	0.70	0.46
Secondary School Completion (%)	6101	0.17	0.37
High School Completion (%)	6101	0.10	0.31
Education (Distribution)			
Uneducated (%)	6101	0.30	0.46
Primary School Graduate (%)	6101	0.53	0.50
Secondary School Graduate (%)	6101	0.06	0.24
High School Graduate (%)	6101	0.08	0.28
University Graduate (%)	6101	0.02	0.15
Personal Characteristics			
Age	6101	40.71	4.77
Urban (%) (when mother was 12 years old)	6101	0.42	0.49
Number of Sibling	6101	6.11	2.51
Birth Place			
Province (%)	6101	0.18	0.38
District (%)	6101	0.19	0.39
Village (%)	6101	0.62	0.48
Mother's Schooling (%)			
No education	6101	0.80	0.40
Primary	6101	0.18	0.39
Secondary	6101	0.01	0.08
High	6101	0.00	0.07
University	6101	0.00	0.07
Father's Schooling (%)			
No education	6101	0.49	0.50
Primary	6101	0.44	0.50
Secondary	6101	0.03	0.18
High	6101	0.03	0.16
University	6101	0.01	0.10

Table 4.14, 4.15, and 4.16 compares the educational attainments of mothers with primary, secondary, and high school graduate mothers with that of mothers with not primary, secondary, and high school graduate mothers. In Table 4.14, schooling outcomes of mothers whose mothers have primary school diploma and that of

mothers whose mothers have no education are given. For instance, 95% of mother completes primary school if their mothers have primary school diploma. The ratio decreases to 63% for mothers whose mothers have no education. The average secondary school completion rate is 39% among mothers, if their mothers have primary school degree. If not, the ratio is 10%. The average high school completion ratio is 25% for mothers whose mothers have primary school diploma, whereas it is 6% for mothers whose mothers have no education (The differences are statistically significant, p values= 0.0000<0.01).

Table 4. 14: Education Attainment of Mothers: Primary school graduate mothers vs. not primary school graduate mothers

	Mothers with primary school graduate mother				Mothers with mother who does not have primary school diploma		
Variables	**N**	**Mean**	**S. D.**		**N**	**Mean**	**S. D.**
Education							
Primary School Completion (%)	1121	**0.95**	0.22		4906	**0.63**	0.48
Secondary School Completion (%)	1121	**0.39**	0.49		4906	**0.10**	0.30
High School Completion (%)	1121	**0.25**	0.44		4906	**0.06**	0.24

In Table 4.15, schooling outcomes of mothers whose mothers have secondary school diploma and that of mothers whose mothers have no or primary school education are given. For instance, all of mother complete primary school if their mothers have secondary school diploma. The ratio decreases to 69% for mothers whose mothers have no or primary school education. The average secondary school completion rate is 89% among mothers, if their mothers have secondary school degree. If not, the ratio is 16%. The average high school completion ratio is 66% for mothers whose mothers have primary school diploma, whereas it is 10% for mothers whose mothers have no or primary school education (The differences are statistically significant, p values= 0.0000<0.01).

Table 4. 15: Education Attainment of Mothers: Secondary school graduate mothers vs. not secondary school graduate mothers

	Mothers with secondary school graduate mother				Mothers with mother who does not have secondary school diploma		
Variables	**N**	**Mean**	**S. D.**		**N**	**Mean**	**S. D.**
Education							
Primary School Completion (%)	35	**1.00**	0.00		6027	**0.69**	0.46
Secondary School Completion (%)	35	**0.89**	0.32		6027	**0.16**	0.36
High School Completion (%)	35	**0.66**	0.48		6027	**0.10**	0.29

In Table 4.16, schooling outcomes of mothers whose mothers have high school diploma and that of mothers whose mothers have less education than high school level are given. For instance, all of mother complete primary school if their mothers have high school diploma. The ratio decreases to 69% for mothers whose mothers have less education than high school level. The average secondary school completion rate of children is 96% among mothers, if their mothers have high school degree. If not, the ratio is 16%. The average high school completion ratio is 93% for mothers whose mothers have high school diploma, whereas it is 10% for mothers whose mothers have less education than high school level (The differences are statistically significant, p values= 0.0000<0.01).

Table 4. 16: Education Attainment of Mothers: High school graduate mothers vs. not high school graduate mothers

	Mothers with high school graduate mother				Mothers with mother who does not have high school diploma		
Variables	**N**	**Mean**	**S. D.**		**N**	**Mean**	**S. D.**
Education							
Primary School Completion (%)	27	**1.00**	0.00		6062	**0.69**	0.46
Secondary School Completion (%)	27	**0.96**	0.19		6062	**0.16**	0.37
High School Completion (%)	27	**0.93**	0.27		6062	**0.10**	0.30

In Table 4.17, schooling outcomes of mothers whose fathers have primary school diploma and that of mothers whose fathers have no education are given. For instance, 83% of mother complete primary school if their fathers have primary school diploma. The ratio decreases to 54% for mothers whose fathers have no education. The average secondary school completion rate is 22% among mothers, if their fathers have primary school degree. If not, the ratio is 5%. The average high school completion ratio is 13% for mothers whose fathers have primary school diploma, whereas it is 3% for mothers whose fathers have no education (The differences are statistically significant, p values= 0.0000<0.01).

Table 4. 17: Education Attainment of Mothers: Primary school graduate fathers vs. not primary school graduate fathers

	Mothers with primary school graduate father				Mothers with father who does not have primary school diploma		
Variables	**N**	**Mean**	**S. D.**		**N**	**Mean**	**S. D.**
Education							
Primary School Completion (%)	2672	**0.83**	0.38		2990	**0.54**	0.50
Secondary School Completion (%)	2672	**0.22**	0.41		2990	**0.05**	0.23
High School Completion (%)	2672	**0.13**	0.34		2990	**0.03**	0.16

In Table 4.18, schooling outcomes of mothers whose fathers have secondary school diploma and that of mothers whose fathers have no or primary school education are given. For instance, 94% of mother completes primary school if their fathers have secondary school diploma. The ratio decreases to 68% for mothers whose fathers have no or primary school education. The average secondary school completion rate is 61 among mothers, if their fathers have secondary school degree. If not, the ratio is 13%. The average high school completion ratio is 44% for mothers whose fathers have secondary school diploma, whereas it is 8% for mothers whose fathers have no or primary school education (The differences are statistically significant, p values= 0.0000<0.01).

Table 4. 18: Education Attainment of Mothers: Secondary school graduate fathers vs. not secondary school graduate fathers

	Mothers with secondary school graduate father				Mothers with father who does not have secondary school		
Variables	**N**	**Mean**	**S. D.**		**N**	**Mean**	**S. D.**
Education							
Primary School Completion (%)	211	**0.94**	0.24		5662	**0.68**	0.47
Secondary School Completion (%)	211	**0.61**	0.49		5662	**0.13**	0.34
High School Completion (%)	211	**0.44**	0.50		5662	**0.08**	0.26

In Table 4.19, schooling outcomes of mothers whose fathers have high school diploma and that of mothers whose fathers have less education than high school are given. For instance, 93% of mother completes primary school if their fathers have high school diploma. The ratio decreases to 69% for mothers whose fathers have less education than high school. The average secondary school completion rate is 54% among mothers, if their fathers have high school degree. If not, the ratio is 15%. The average high school completion ratio is 54% for mothers whose fathers have high school diploma, whereas it is 9% for mothers whose fathers have less education than high school (The differences are statistically significant, p values= 0.0000<0.01).

Table 4. 19: Education Attainment of Mothers: High school graduate fathers vs. not high school graduate fathers

	Mothers with high school graduate father				Mothers with father who does not have high school diploma		
Variables	**N**	**Mean**	**S. D.**		**N**	**Mean**	**S. D.**
Education							
Primary School Completion (%)	160	**0.93**	0.25		5873	**0.69**	0.46
Secondary School Completion (%)	160	**0.54**	0.50		5873	**0.15**	0.35
High School Completion (%)	160	**0.54**	0.50		5873	**0.09**	0.28

In Figure 4.4, we observe that if the mother's father education level increase, the primary school completion rate of these mothers also rises. For instance, the average

primary school completion ratio is 95% and 83% for mothers whose mothers and fathers have primary school education, respectively. However, it increases to exactly 100% and 94%, if mother's fathers and mother's mothers take at least secondary school education.

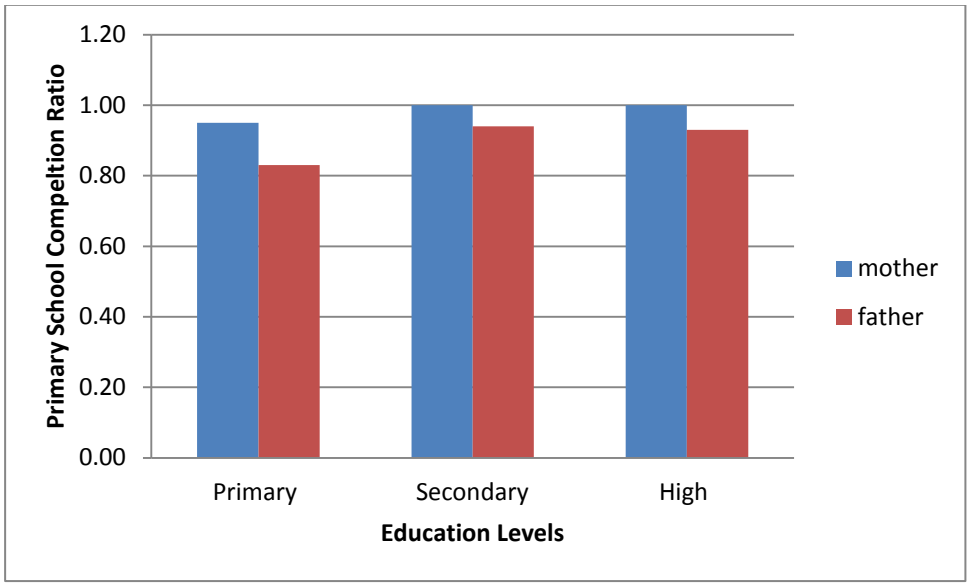

Figure 4. 4: Primary School Completion Rates - Parent's Education Levels

Figure 4.5 relates the secondary school completion rate of mothers to their parents' education level. If the mothers and fathers of the children's mothers are primary school graduate, the secondary school completion rate is nearly 40% and 20%, respectively. However, the ratio reaches 90% if mothers are at least secondary school graduate. In addition, the ratio is nearly 60% for mothers whose fathers finish at least secondary school.

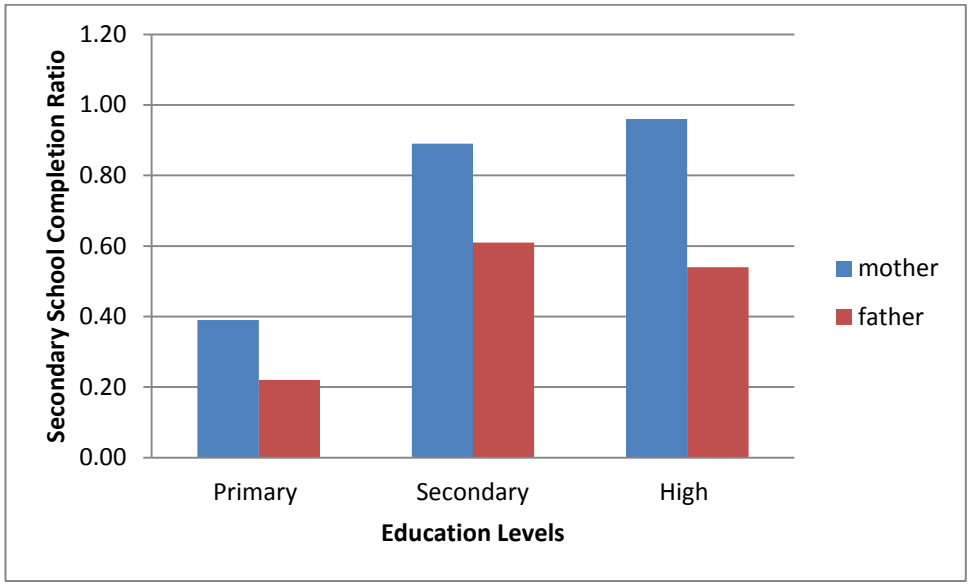

Figure 4. 5: Secondary School Completion Rates - Parent's Education Levels

The final graph related to our second analysis shows the association between high school completion ratio and parents' education. In general, the high school completion rate is low compared to that of primary and secondary school completion rates for mothers. The high school completion ratio of mothers is low if their parents finish the primary school, which is approximately 25%. If mothers of mothers graduate from secondary school, the high school completion rate is 66%, whereas this ratio is nearly 61% for that of fathers. If the mother's mothers education level escalates, the high school completion rate of mothers increases also from 66% to 93%.

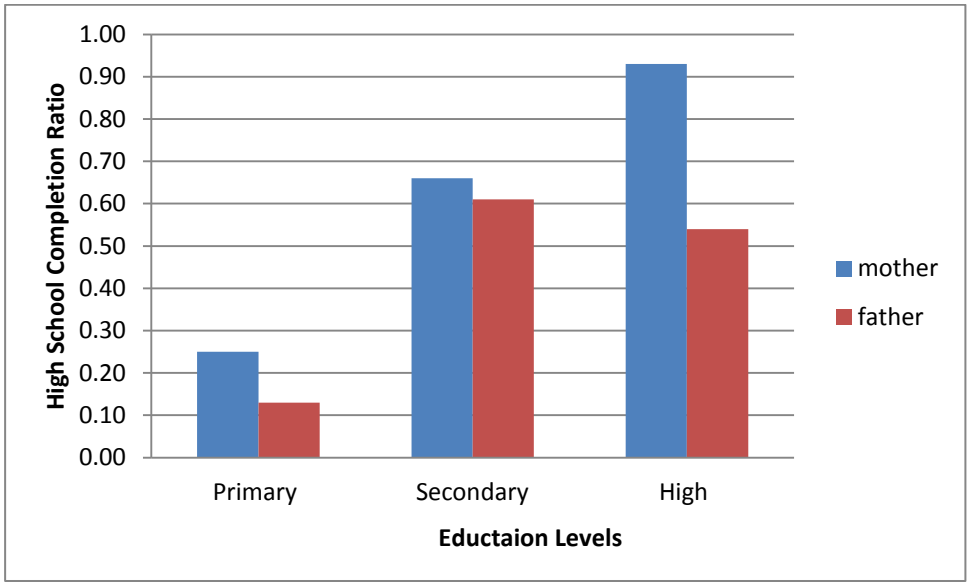

Figure 4. 6: High School Completion Rates - Parent's Education Levels

Overall, there is an apparent association between children's mothers and children's grandparents' educational attainments. With increasing level education of grandparents, the primary, secondary, and high school completion rates of children's mothers escalate, also. The marginal effects of grandmother's and grandfather's education on children's mothers' education outcomes will be observed through regression analysis.

4.2.2. Descriptive Statistics of the Second Analysis: Children-Children's Parents

In the second analysis, we try to understand the association between children's education and their parents' education so that we are able to decide whether or not the inequality opportunity has decreased over time. In other words, children-children's parents are the second stage of the estimation. Figure 4.7 shows completed years of schooling of children ages of 6-24. Although we expect the linear relationship between completed years of schooling and age, the completed years of schooling follows an increasing trend with a decreasing rate. This may be related to a decreasing school participation in later ages or grade repetition. In the graph, it can be seen that 14 years old children completed eighth years of schooling meaning that they graduate from a secondary school. This can be related to fact that the eight-year

compulsory schooling law was enacted in 1997 and our all observations are affected from this law. However, average schooling years are 10 among children whose ages 17-20, which is less than 12. This means they do not finish their high school education on the average.

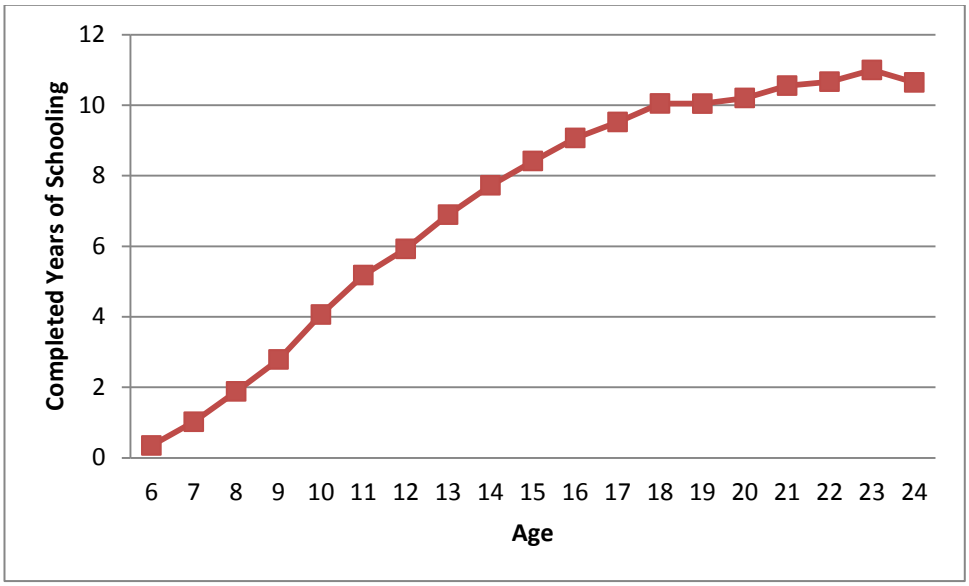

Figure 4. 7: Completed Years of Schooling by Age

Table 4.20 represents the information about the education status of children, their fathers' and mothers' characteristics such as their age, education, employment status, and sectors of employment (Table 4.20). The characteristics of children are represented separately for girls and boys.

The summary statistics given in Table 8 suggest that the average age of children is 13. Nearly 70% of the children live in urban areas. The number of siblings who live at home is about 2 for both girls and boys. Approximately 41% of children's birth place is province, whereas 24% of children's birth place is a district center. Nearly 34% of them were born in a village.

In regards to children educational outcomes, we consider the 5^{th}, 8^{th}, and 12^{th} grade school completion rates. As noted earlier, we investigate the schooling outcomes of

children by age groups (Table 4.20). If completed schooling years are more than or equal to 5 years, it can be said that child has finished the 5th grade. When we investigate the 5th grade completion, we restrict our data to children older than 11. To reiterate, we assume that school starting age is 6 and we expect that children should finish the 5th grade by the end of age 11. At the mean, we observe that 98% of children older than 11 have completed 5th grade. In fact, the 5th grade completion rate for boys is a little higher relatively to girls. The 5th grade completion rate is 2 percentage point lower for girls compared to boys. The average 8th grade completion rate is 92% for children older than 14. The 12th grade completion rate drops both for girls and boys. The 12th grade completion rate is estimated at 53% for girls, but at 35% for boys older than 18 years of age.

In consideration of mother's education information, it can be easily noticed that the education level is generally low for women and men. Approximately 30% of the mothers have no education. Indeed, a half of the mothers in both groups are primary (5-years) school graduates. The average primary school completion rate of children's mothers, which is 53%, is higher than the average secondary (8-years) completion ratio (6%). Additionally, roughly 8% of the mothers have high school (11-years) education. Approximately 2% of the mothers have university education.

From father's education information, it can be easily noticed that education level is generally higher than that of mothers. Among girls and boys, a proportion of fathers without an education are 10% and 11%, which is less than that of mothers of both groups (30%). Approximately half of both groups are primary school (5-years) graduate. 54% percent of fathers of children are primary school (5 years) graduates, 13% are secondary school (8-years) graduates, and 16% are high school (11-years) graduates. When compared to mothers' secondary school completion ratios, fathers have completed higher levels of education. Only 8% of mothers of children have graduated from a high school. This ratio increases to 16% for children's fathers. Furthermore, 6% of children have university graduate fathers.

In regard to father's working status, labor force participation rate of father's is 89%. As it concerns mother's working status, the labor force participation rate of orphans' mothers is 32.

Approximately 26% of children are at the bottom 20% of the wealth distribution, whereas 31% of children are at the top 20% of the wealth distribution. The ratio is 19% for children who come from middle income families.

Table 4. 20: General Characteristics of Children whose age 12-24

	Children whose ages 12-24								
Variables		**Girls**			**Boys**			**Total**	
	N	**Mean**	**S. D.**	**N**	**Mean**	**S. D.**	**N**	**Mean**	**S. D.**
Education									
5th Grade Completion (%) (Age≥12)	2834	0.97	0.18	3267	0.99	0.12	6101	0.98	0.15
8th Grade Completion (%) (Age≥15)	1751	0.90	0.30	2212	0.94	0.24	3963	0.92	0.26
12th Grade Completion (%) (Age≥19)	660	0.53	0.50	1027	0.35	0.48	1687	0.42	0.49
Personal Characteristics									
Age	2834	16.16	3.23	3267	16.74	3.47	6101	16.47	3.37
Urban (%)	2834	0.69	0.46	3267	0.69	0.46	6101	0.69	0.46
Number of Sibling	2834	2.52	1.93	3267	2.32	1.79	6101	2.41	1.86
Birth Place									
Province (%)	2834	0.42	0.49	3267	0.41	0.49	6101	0.41	0.49
District (%)	2834	0.24	0.43	3267	0.24	0.43	6101	0.24	0.43
Village (%)	2834	0.33	0.47	3267	0.35	0.48	6101	0.34	0.47
Wealth Status (%)									
Poorest	2834	0.26	0.44	3267	0.27	0.44	6101	0.26	0.44
Poorer	2834	0.23	0.42	3267	0.24	0.42	6101	0.23	0.42
Middle	2834	0.19	0.39	3267	0.20	0.40	6101	0.19	0.40
Rich	2834	0.32	0.47	3267	0.30	0.46	6101	0.31	0.46
Mother's Schooling (%)									
No education	2834	0.28	0.45	3267	0.32	0.47	6101	0.30	0.46
Primary	2834	0.54	0.50	3267	0.52	0.50	6101	0.53	0.50
Secondary	2834	0.06	0.25	3267	0.06	0.24	6101	0.06	0.24
High	2834	0.09	0.29	3267	0.08	0.26	6101	0.08	0.28
University	2834	0.02	0.14	3267	0.02	0.15	6101	0.02	0.15
Mother's Working Status (%)									
Employed	2834	0.35	0.48	3267	0.35	0.48	6101	0.32	0.47
Father's Schooling (%)									
No education	2834	0.10	0.30	3267	0.11	0.31	6101	0.10	0.30
Primary	2834	0.54	0.50	3267	0.54	0.50	6101	0.54	0.50
Secondary	2834	0.13	0.34	3267	0.14	0.34	6101	0.13	0.34
High	2834	0.17	0.37	3267	0.16	0.37	6101	0.16	0.37
University	2834	0.06	0.23	3267	0.06	0.23	6101	0.06	0.23
Father's Working Status (%)									
Employed	2834	0.89	0.31	3267	0.87	0.34	6101	0.88	0.33

Table 4.21, 4.22, and 4.23 compares educational outcomes of the children whose mothers have primary, secondary, and high school diploma and children whose mothers have no primary, secondary, and high school diploma, respectively. In Table 4.21, schooling outcomes of children whose mothers have primary school diploma and that of children whose mothers have no education are given. For instance, 99 % of children older than 11 complete the 5th grade if their mothers have primary school diploma. The ratio decreases to 95% for children whose mothers have no education. The difference enlarges when the education level increases. The average 8th grade completion rate of children is 95% among children older than 14, if their mothers have primary school degree. If not, the ratio becomes 84%. The average 12th grade completion ratio is 46% for children whose mothers have primary school diploma, whereas it is 27% for children whose mothers have no education (The differences are statistically significant, p values= 0.0000<0.01).

Table 4. 21: Education Attainment of Children: Primary school graduate mothers vs. not primary school graduate mothers

	Children whose ages 6-24 with primary school graduates mother										Children whose ages 6-24 with mother who does not have primary school diploma								
Variables		Girls			Boys			Total				Girls			Boys			Total	
	N	Mean	S. D.	N	Mean	S. D.	N	Mean	S. D.		N	Mean	S. D.	N	Mean	S. D.	N	Mean	S. D.
Education																			
5th Grade Completion (%) (Age≥12)	1536	**0.99**	0.12	1701	**0.99**	0.09	3237	**0.99**	0.11		802	**0.92**	0.28	1048	**0.97**	0.17	1850	**0.95**	0.22
8th Grade Completion (%) (Age≥15)	970	**0.95**	0.22	1165	**0.95**	0.22	2135	**0.95**	0.22		492	**0.76**	0.43	730	**0.90**	0.30	1222	**0.84**	0.36
12th Grade Completion (%) (Age≥19)	370	**0.57**	0.50	517	**0.38**	0.49	887	**0.46**	0.50		177	**0.31**	0.46	394	**0.26**	0.44	571	**0.27**	0.45

Table 4.22 shows that the 5th grade completion rate is estimated at 99% for children with secondary school graduate mothers, but at 97% for children with mothers have primary school diploma or no education. As in the previous tables, the same significant difference is observed for 8th and 12th grade completion rate of children older than 14, and 18, respectively. (The difference is statistically significant, p values=0.0000<0.01 for both girls and boys).

Table 4. 22: Education Attainment of Children: Secondary school graduate mothers vs. not secondary school graduate mothers

	Children whose ages 6-24 with secondary school graduates mother										Children whose ages 6-24 with mother who does not have secondary school diploma								
Variables		Girls			Boys			Total				Girls			Boys			Total	
	N	Mean	S. D.	N	Mean	S. D.	N	Mean	S. D.		N	Mean	S. D.	N	Mean	S. D.	N	Mean	S. D.
Education																			
5th Grade Completion (%) (Age≥12)	182	**0.99**	0.10	195	**0.99**	0.10	377	**0.99**	0.10		2338	**0.96**	0.19	2749	**0.98**	0.13	5087	**0.97**	0.16
8th Grade Completion (%) (Age≥15)	110	**0.97**	0.16	124	**0.99**	0.09	234	**0.98**	0.13		1462	**0.89**	0.32	1895	**0.93**	0.25	3357	**0.91**	0.28
12th Grade Completion (%) (Age≥19)	45	**0.73**	0.45	45	**0.53**	0.50	90	**0.63**	0.48		547	**0.48**	0.50	911	**0.32**	0.47	1458	**0.38**	0.49

In Table 4.23, schooling outcomes of children whose mothers have high school diploma and that of children whose mothers have no education or less education than the high school are given. For instance, 99% of children older than 11 complete the 5^{th} grade if their mothers have high school diploma. The ratio decreases to 97% for children whose mothers have less education than the school. The difference enlarges when the education level increase. The average 8^{th} grade completion rate of children is 100% among children older than 14, if their mothers have high school degree. If not, the ratio becomes 92%. The average 12^{th} grade completion ratio is 71% for children whose mothers have high school diploma, whereas it is 40% for children whose mothers have less education than the high school (The differences are statistically significant, p values= 0.0000<0.01).

Table 4. 23: Education Attainment of Children: High school graduate mothers vs. not high school graduate mothers

	Children whose ages 6-24 with high school graduates mother										Children whose ages 6-24 with mother who does not have high school diploma								
Variables		Girls			Boys			Total				Girls			Boys			Total	
	N	Mean	S. D.	N	Mean	S. D.	N	Mean	S. D.		N	Mean	S. D.	N	Mean	S. D.	N	Mean	S. D.
Education																			
5th Grade Completion (%) (Age≥12)	258	**0.99**	0.09	246	**1.00**	0.06	504	**0.99**	0.08		2520	**0.96**	0.19	2944	**0.98**	0.13	5464	**0.97**	0.16
8th Grade Completion (%) (Age≥15)	145	**1.00**	0.00	150	**0.99**	0.08	295	**1.00**	0.06		1572	**0.89**	0.31	2019	**0.94**	0.25	3591	**0.92**	0.28
12th Grade Completion (%) (Age≥19)	58	**0.81**	0.40	61	**0.61**	0.49	119	**0.71**	0.46		592	**0.50**	0.50	956	**0.33**	0.47	1548	**0.40**	0.49

Since our other main exogenous variable is father's education attainment, Table 4.24, 4.25, and 4.26 compare the educational outcomes of the children whose fathers have primary, secondary, and high school diploma and children whose fathers have no

primary, secondary, and high school diploma, respectively. In Table 4.24, schooling outcomes of children whose fathers have primary school diploma and that of children whose fathers have no education are given. For instance, 98% of children complete the 5th grade if their fathers have primary school diploma. The ratio decreases to 90% for children whose fathers have no education. In fact, this difference is higher than that of mothers. The average 8th grade completion rate of children is 93% among children older than 14, if their fathers have primary school degree. If not, the ratio is 75%. The average 12th grade completion ratio is 38% for children with primary school diploma, whereas it is 25% for children whose fathers have no education (The differences are statistically significant, p values= 0.0000<0.01).

Table 4. 24: Education Attainment of Children: Primary school graduate fathers vs. not primary school graduate fathers

	Children whose ages 6-24 with primary school graduates father									Children whose ages 6-24 with father who does not have primary school diploma								
Variables		Girls			Boys			Total			Girls			Boys			Total	
	N	Mean	S. D.	N	Mean	S. D.	N	Mean	S. D.	N	Mean	S. D.	N	Mean	S. D.	N	Mean	S. D.
Education																		
5th Grade Completion (%) (Age≥12)	1543	**0.97**	0.16	1755	**0.99**	0.11	3298	**0.98**	0.14	278	**0.85**	0.36	347	**0.94**	0.24	625	**0.90**	0.30
8th Grade Completion (%) (Age≥15)	949	**0.91**	0.28	1206	**0.94**	0.23	2155	**0.93**	0.26	166	**0.65**	0.48	246	**0.81**	0.39	412	**0.75**	0.43
12th Grade Completion (%) (Age≥19)	336	**0.49**	0.50	567	**0.31**	0.46	903	**0.38**	0.49	66	**0.27**	0.45	132	**0.23**	0.43	198	**0.25**	0.43

Table 4.25 shows that the 5th grade completion rate is estimated at 99% for children with secondary school graduate fathers, but at 97% for children with fathers have primary school diploma or no education. As in the previous graphs, the same significant difference is observed for 8th grade and 12th grade completion rate of children older than 14, and 18, respectively. (The difference is statistically significant, p values=0.0000<0.01 for both girls and boys).

Table 4. 25: Education Attainment of Children: Secondary school graduate fathers vs. not secondary school graduate fathers

	Children whose ages 6-24 with secondary school graduates father									Children whose ages 6-24 with father who does not have secondary school diploma								
Variables		Girls			Boys			Total			Girls			Boys			Total	
	N	Mean	S. D.	N	Mean	S. D.	N	Mean	S. D.	N	Mean	S. D.	N	Mean	S. D.	N	Mean	S. D.
Education																		
5th Grade Completion (%) (Age≥12)	377	**0.98**	0.14	442	**1.00**	0.05	819	0.99	0.10	1821	**0.95**	0.21	2102	**0.98**	0.14	3923	**0.97**	0.18
8th Grade Completion (%) (Age≥15)	229	**0.92**	0.28	308	**0.98**	0.15	537	0.95	0.21	1115	**0.87**	0.33	1452	**0.92**	0.27	2567	**0.90**	0.30
12th Grade Completion (%) (Age≥19)	88	**0.56**	0.50	140	**0.37**	0.48	228	0.44	0.50	402	**0.46**	0.5	699	**0.30**	0.46	1101	**0.36**	0.48

In Table 4.26, schooling outcomes of children whose fathers have high school diploma and that of children whose fathers have no education or less education than the high school are given. For instance, 99% of children complete 5th grade if their fathers have high school diploma. The ratio decreases to 97% for children whose fathers have no education. The difference enlarges when the education level increase. The average 8th grade completion rate of children is 98% among children older than 14, if their fathers have high school degree. If not, the ratio becomes 91%. The average 12th grade completion ratio is 59% for children whose fathers with high school diploma, whereas it is 37% for children whose fathers have less education than high school (The differences are statistically significant, p values= 0.0000<0.01).

Table 4. 26: Education Attainment of Children: High school graduate fathers vs. not high school graduate fathers

	Children whose ages 6-24 with high school graduates father									Children whose ages 6-24 with father who does not have high school diploma								
Variables		Girls			Boys			Total			Girls			Boys			Total	
	N	Mean	S. D.	N	Mean	S. D.	N	Mean	S. D.	N	Mean	S. D.	N	Mean	S. D.	N	Mean	S. D.
Education																		
5th Grade Completion (%) (Age≥12)	472	**1.00**	0.07	533	**0.99**	0.09	1005	**0.99**	0.08	2198	**0.96**	0.20	2544	**0.98**	0.13	4742	**0.97**	0.17
8th Grade Completion (%) (Age≥15)	305	**0.97**	0.16	330	**0.98**	0.14	635	**0.98**	0.15	1344	**0.88**	0.32	1760	**0.93**	0.25	3104	**0.91**	0.29
12th Grade Completion (%) (Age≥19)	132	**0.66**	0.48	146	**0.53**	0.50	278	**0.59**	0.49	490	**0.48**	0.50	839	**0.31**	0.46	1329	**0.37**	0.48

All tables above also suggest that when the education level of parents increases, the completion rates of children at each level also increases. To show this clearly, mother's and father's completed years of education are categorized in four groups. The following graphs demonstrate that what happened in the 5th grade, the 8th grade,

and the 12th grade completion ratio, if the completed years of schooling of parent rise.

In Figure 4.8, we observe that if the children's parents' completed years of schooling increase, the 5th grade completion rate of these children also rises. For instance, the average 5th grade completion ratio is 95% and 90% for children whose mothers and fathers have 0-3 years of education, respectively. However, it increases to nearly 99%, if parents take 8-11 completed years of education.

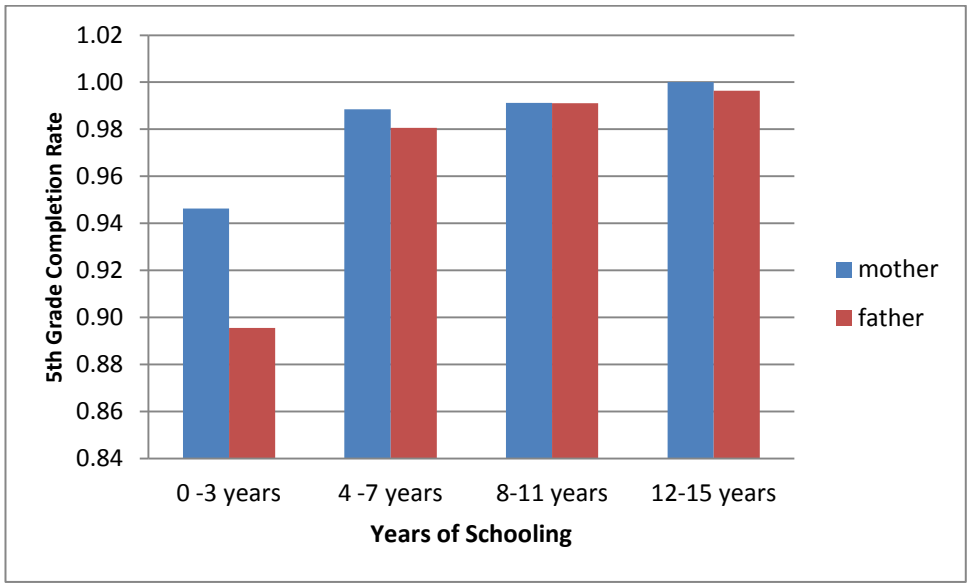

Figure 4. 8: The 5th Grade Completion Rates - Parent's Years of Schooling

Figure 4.9 relates the 8th grade completion rate of children to their parents' completed years of education. If the fathers of the child have 0-3 years of education, the 8th grade school completion rate is about 80%. However, the ratio exceeds 80% if parents have 4-7 years of education. Furthermore, it approaches to 100% for children whose parents have 8-15 years of education.

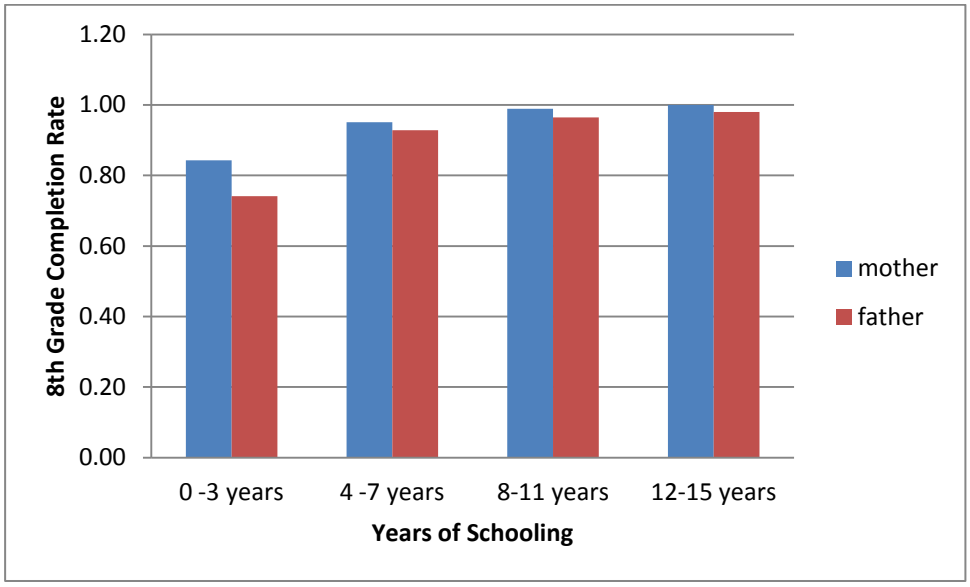

Figure 4. 9: The 8th Grade Completion Rates - Parent's Years of Schooling

The final graph related shows the association between 12th grade completion ratio and parents' education. In general, the 12th grade completion rate is low compared to that of the 5th grade and the 8th grade. When the education level of parents escalates, the 12th grade completion rate also rises. For instance, the average the 12th grade completion ratio is 38% for children whose fathers have 4-7 years of education. However, it becomes 75% for children whose parents have 12-15 years of education.

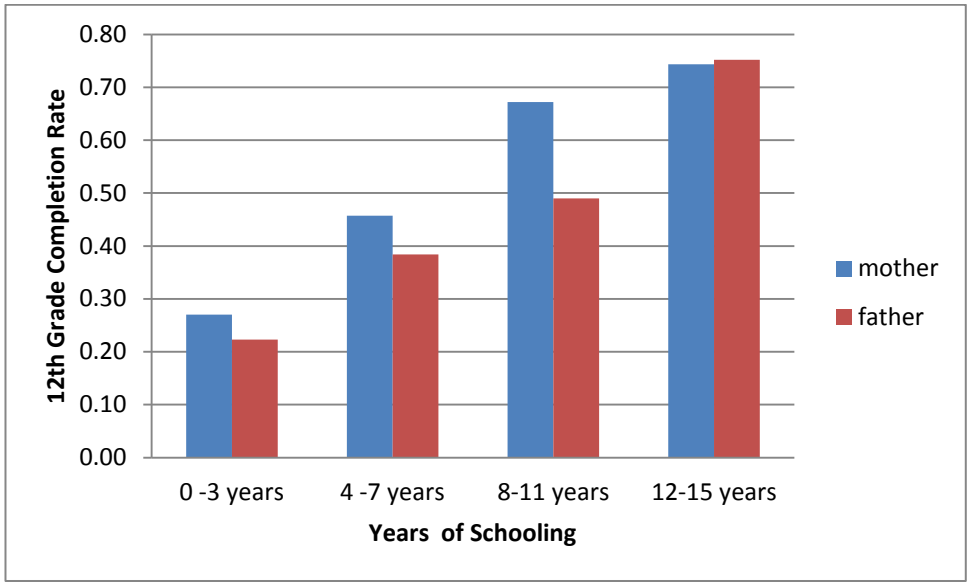

Figure 4. 10: The 12th Grade Completion Rates- Parent's Years of Schooling

Overall, there is an apparent association between parents' and children's education attainments. With increasing completed years of education of parents, the 5th, 8th and 12th grade completion rates escalate, also. The marginal effects of mother's and father's education on children's education outcomes will be observed through regression analysis in the following parts.

CHAPTER 5

EMPIRICAL METHODOLOGY

5.1. Father's Death

In the empirical model, since our dependent variables are school completion rates at various levels of schooling each either taking a value of 0 or 1, using ordinary least squares (OLS) estimation is not appropriate. Therefore, we use a logit model, which assumes that errors are distributed logistically (Cameron and Trivedi, 2005). For the analysis on school dropout, we also use a logit model, which will be explained in Section 5.1. Logit model is applied using STATA econometric software package.

5.1.1. Logit Model on School Completion

Logit regression assumes that error terms have logistic distribution. In order to observe the impact of paternal death on 5^{th} grade, 8^{th} grade, and 12^{th} grade completion rates, the relevant dependent variable is regressed on a dummy showing whether the father is alive or not. Controlling for both personal and family characteristics of children, the following equations are estimated:

$$C1_i=\beta_0+\beta_1 F1_i+ \beta_2 F2_i + \beta_3 X_i+ \beta_4 Y_i + \beta_5 P_i + \varepsilon_i \quad (5.1.1.1)$$

$$C2_i= \beta_0+\beta_1 F1_i+ \beta_2 F2_i + \beta_3 X_i+ \beta_4 Y_i + \beta_5 P_i + \varepsilon_i \quad (5.1.1.2)$$

$$C3_i= \beta_0+\beta_1 F1_i+ \beta_2 F2_i + \beta_3 X_i+ \beta_4 Y_i + \varepsilon_i \quad (5.1.1.3)$$

where *C1i* is the dummy variable to define the 5^{th} grade completion (= 1 if children finish 5^{th} grade, 0 otherwise), *Fi* is the dummy variables created to provide information about whether the child's father is alive or not at specific age ranges (= 1 if father is alive, 0 otherwise). Since we want to see whether or not death faced during school age is more effective than that of pre-school time, two father's death dummies are used in each equation to capture and compare the effects of death faced during school age and pre-school periods. For instance, for the 5^{th} grade completion

probability, 6-11 and 0-11 dummies are used. The father death dummy 0-11 takes the value of 1 if children's age at father's death is 0-11 for the 5^{th} grade. For the 8^{th} grade completion probability, 6-14 and 0-14 dummy is used. The father death dummy 0-14 takes the value of 1 if children's age at father's death is 0-14 for 8^{th} grade. For the 12^{th} grade completion probability, 6-18 and 0-18 dummies are created. The father death dummy 0-18 takes the value of 1 if children's age at father's death is 0-18 for 12^{th} grade.

We also include different father's death dummies in our model: father dies when the child was 6-11 years of age, 11-14 years of age, and 15-18 years of age. However, the model drops these variables since we do our analysis by considering in the framework of urban-rural and girl-boy. In other words, we have smaller number of orphans in each case compared to situation where all orphans contribute to the model. Therefore, it is impossible to run the model in Stata. Due to this finding, we continue to analysis with two dummies to describe father's death: father dies when the child was of preschool ages and father dies during school ages.

Xi is a vector of explanatory variables that shows the family and household characteristics of children such as parent's marriage age and parent's education. Controlling for these households' characteristics is important because these variables can have a role in children's educational outcomes. The information of father's marriage age and father's education exist in the data set for all biological fathers even if the fathers deceased. *Yi* is a vector of explanatory variables that shows the characteristics of children such as age, number of sibling, and birth place that show whether the child is born in a province, district, and village. P_i is the dummy variable created for identifying children affected by 2012 education law. β_0 is the intercept term, β_1 and β_2 are the slope coefficient showing how father's death affects school completion of children. These are the coefficient that we are most interested in. β_3 is the vector of slope coefficients for family and household characteristics of children, β_4 is the vector of slope coefficients for characteristics of children, β_5 is the dummy

of slope coefficients for the 2012 education policy, ε_i is the error term. $C2_i$ and $C3_i$ stands for 8^{th} grade and 12^{th} grade completion, respectively.

The quality–quantity trade-off theory of Becker and Tomes (1986) suggest that the number of children affects families' investment decision on each child' education since they have limited income and time. Family size is important because children have to share parental time and financial investment which decrease the share of children if number of sibling increase. Dayıoğlu et al. (2009) find that negative correlation observed between sib-ship size and school enrolments among urban Turkish households. Moreover, Liu (2014) find that the number of children has a significant negative effect on child height in China. Indeed, the effects of the number of sibling can be seen in later life of children since they accumulate less education and health compared to their counterparts with no siblings. For example, Kantarevic and Mechoulan (2006) and Bjorklund et al. (2007) find that adults with many siblings earn less in US.

According to the human capital theory explained in the theoretical literature part, the schooling decision is made by parents and more educated parents have a priority of providing more education to their children by considering children's expected future earnings. Dubow et al. (2009) show empirical results of this theory. Children with more educated parents get more education, and then earn higher income thanks to both educated and well-connected parents. Also, education of parents is a good indicator for family' income and controlling it is significant for the analysis.

Parental marriage age is also an important control variable for children's education outcomes. Marriages at early age may reduce parent's educational attainment, which can adversely affect their children's education outcomes. Sekhri & Debnath (2014) assert that one year time lag in mother's marriage age increases the probability of doing the most challenging arithmetic and reading tasks by 3.5 percentage points.

As explained in the data part, 5th grade completion is conditioned on being 12 years old or older. Eighth grade completion is conditioned on being 15 years old or older and the 12th grade completion is estimated among children older than 18. The ages of 12, 15, and 19 are used as threshold ages throughout this thesis to identify whether children finish each school level or not. These different levels of school completion are regressed on the variables explained above by considering these age intervals.

In analyzing different level of school completion, we use different definitions of orphan-hood based on the age at which children lost their father. For instance, in analyzing the 8th grade completion, the children who lost their fathers before the age of 15 are defined as orphans. For 12th grade completion, the definition of orphan-hood is losing father before the age of 19.

5.1.2 Logit Model-Dropout

In the duration analysis with our expanded data set, a logit model is used to observe the effect of paternal death on dropout rates. The model is specified as follows:

$$D_i=\beta_0+\beta_1 F1_i+\beta_2 F2_i+\beta_3 V_i+\beta_4 K_i+\beta_5 P_i+\varepsilon_i \qquad (5.1.2.1)$$

where D_i is the dummy variable created for identifying the dropouts from school (= 1 if the child drop outs at any point before completing high school, 0 otherwise). *F1i* is the dummy variables created to provide information about whether father is alive or not when the child's age is 6-11 when father passed away (= 1 if father of child is alive, 0 otherwise), *F2i* is the dummy variables created to provide the information about whether father is alive or not when a child's age is 0-11 when father passed away (= 1 if father is alive, 0 otherwise), *Vi* is a vector of explanatory variables that shows the household characteristics of children, *Ki* is a vector of explanatory variables that shows the characteristics of children. P_i is the dummy variable created for identifying children affected by 2012 education law. β_0 is the intercept term, β_1 and β_2 are the slope coefficients of the father mortality status dummy variables, β_3 is the vector of slope coefficients for family and household

characteristics of the children, β_4 is the vector of slope coefficients for the characteristics of children, β_5 is the dummy of slope coefficients for the 2012 education policy, ε_i is the error term.

The probability of dropping out of school is analyzed for different age groups. A child is considered to be a secondary school (eight years) drop out if he/she left school at age 12, 13, or 14. A child is considered to be a high school (twelve years) drops out if he/she left school at age 15, 16, 17 or 18. Equation 5.1.2.1 gives the specification for secondary school dropouts. Here, father's death must have occurred before age 15. The same model is applied for high school dropouts by changing definition of orphans. In this specification, children count as orphans if they lose their parent before the age of 19.

5.1.3. Logit Model-Leaving Home

The effect of the death of the child's father on the probability of leaving home is analyzed by using a logit model. The model is defined in the following way:

$$L_i=\beta_0+\beta_1 F1_i+ \beta_2 F2_i +\beta_3 T_i+ \beta_4 Z_i + \varepsilon 1_i \qquad (5.1.3.1)$$

Where L_i is the dummy variable created to provide the information about whether children are at home or not (= 1 if the child is at home, 0 otherwise). *F1i* is the dummy variables created to provide information about whether father is alive or not when the child's age is 6-14 when father passed away (= 1 if father of child is alive, 0 otherwise), *F2i* is the dummy variables created to provide the information about whether father is alive or not when a child's age is 0-14 when father passed away (= 1 if father is alive, 0 otherwise), *Ti* is a vector of explanatory variables that shows the household characteristics of children, *Zi* is a vector of explanatory variables that shows the characteristics of children. β_0 is the intercept term, β_1 and β_2 are the slope coefficients of the father's mortality status dummy variable, β_3 is the vector of slope coefficients for the family and household characteristics of the children, β_4 is the vector of slope coefficients for the characteristics of the children, ε_i is the error term.

The probability of leaving home is also analyzed among children whose ages are equal to or higher than 14. We make sure that father's death takes place before the child leaves home.

5.2. Intergenerational Transmission of Education

In the empirical model, since our dependent variables which are school completion rates of mothers and children at each level of schooling are dummy variables taking the value of 1 if the child or the mother has completed that level of schooling and 0, otherwise, applying ordinary least squares (OLS) estimation is not appropriate. Therefore, we estimate a logit model which assumes that error terms have logistic distribution (Cameron and Trivedi, 2005). Logit models are applied via STATA.

5.2.1. Logit Model-Mothers' School Completion Rates-The First Generation

To observe the impact and magnitude of grandmothers' and grandfathers' educational backgrounds on mothers' education attainment, mothers' primary (5-years), secondary (8-years), and high school (11-years) completion are regressed on their parental educational dummies which gives the information about whether grandmothers and grandfathers have primary, secondary, or high school diploma. Controlling for both personal and family characteristics of mothers, the following equations are estimated:

$$M1_i=\beta_0+\beta_1 P1_i+\beta_2 S1_i+\beta_3 H1_i+\beta_4 P2_i+\beta_5 S2i+\beta_6 H2_i+\beta_7 X_i+\varepsilon i \quad (5.2.1.1)$$

$$M2_i=\beta_0+\beta_1 P1_i+\beta_2 S1_i+\beta_3 H1_i+\beta_4 P2_i+\beta_5 S2i+\beta_6 H2_i+\beta_7 X_i+\varepsilon_i \quad (5.2.1.2)$$

$$M3_i=\beta_0+\beta_1 P1_i+\beta_2 S1_i+\beta_3 H1_i+\beta_4 P2_i+\beta_5 S2i+\beta_6 H2_i+\beta_7 X_i+\varepsilon_i \quad (5.2.1.3)$$

where $M1_i$ is the dummy variable that shows primary school completion (= 1 if mothers complete primary school, 0 otherwise), $P1_i$ is the dummy variable that shows whether grandmothers are graduates of primary school or not (= 1 if grandmothers have primary school diploma, 0 otherwise), $S1_i$ is the dummy variable that shows whether grandmothers are graduates from secondary school or not (= 1 if

grandmothers have secondary school diploma, 0 otherwise), and $H1_i$ is the dummy variable that shows whether grandmothers graduated from high school or not (= 1 if grandmothers have high school diploma, 0 otherwise). $P2_i$, $S2_i$, and $H2_i$ are the father's educational dummies which have the same definitions as in that of mother's. Since the age range of mothers is 28-49, we do not restrict any age limitations on our sample. Xi is a vector of explanatory variables that shows the characteristics of mothers, β_0 is the intercept term, β_1- β_6 are the slope coefficients of the grandmothers and grandfathers' educational dummy variables, β_7 is the vector of slope coefficients for family and household characteristics of the children, ε_i is the error term. $M2_i$ and $M3_i$ stand for secondary and high school completion rates for mothers, respectively.

The vector of explanatory variables for mothers' individual characteristics includes mother's age, mothers' number of sibling, mother's birth place, and mother's current place of residence. Controlling for these individuals' characteristics is important because these variables can have a role in mothers' educational outcomes and help reduce unobserved variable effects in the models.

Becker and Tomes (1986) argue that human capital investment in each child is negatively correlated with the number of children. Family size is important because children have to share parental time and financial investment which decrease the share of children if number of sibling increase. Ferreira, Gignoux, & Aran (2010) find that female adults who have few siblings have higher accumulated wealth relative to children who have many siblings in Turkey. Indeed, effects of number of sibling can be seen in later life of children since they accumulate education and health less compared to counterparts with no siblings.

5.2.2. Logit Model- Children's School Completion Rates-The Second Generation

As explained in the data part, our children's age range is 6-24 in our data set. Therefore, the 5th grade completion is analyzed by restricting our sample whose age are equal to or higher than 11. The age of 15 and 19 are the benchmark ages for the 8th grade and the 12th grade completion rates, respectively. The ages of 12, 15, and 19

are used as threshold ages throughout this thesis to identify whether children finish each school level or not. These different levels of completing school are regressed on the variables explained above by considering these age intervals. The model is specified as follows:

$$C1_i=\beta_0+\beta_1 P1_i+\beta_2 S1_i+\beta_3 H1_i+\beta_4 P2_i+\beta_5 S2i+\beta_6 H2_i+\beta_7 V_i+\beta_8 Y_i+\varepsilon_i \quad (5.2.2.1)$$

$$C2_i=\beta_0+\beta_1 P1_i+\beta_2 S1_i+\beta_3 H1_i+\beta_4 P2_i+\beta_5 S2i+\beta_6 H2_i+\beta_7 V_i+\beta_8 Y_i+\varepsilon_i \quad (5.2.2.2)$$

$$C3_i=\beta_0+\beta_1 P1_i+\beta_2 S1_i+\beta_3 H1_i+\beta_4 P2_i+\beta_5 S2i+\beta_6 H2_i+\beta_7 V_i+\beta_8 Y_i+\varepsilon_i \quad (5.2.2.3)$$

where $C1_i$ is the dummy variable to define the 5th grade completion (= 1 if children finish the 5th grade, 0 otherwise), $P1_i$ is the dummy variables that shows whether mothers graduated from primary school or not (= 1 if mothers have primary school diploma, 0 otherwise), $S1_i$ is the dummy variables that shows whether mothers graduated from secondary school or not (= 1 if grandmothers have secondary school diploma, 0 otherwise), and $H1_i$ is the dummy variables that shows whether mothers graduated from high school or not (= 1 if mothers have high school diploma, 0 otherwise). $P2_i$, $S2_i$, and $H2_i$ are the father's education dummies which have the same definitions as in that of mother's. *Vi* is a vector of explanatory variables that shows the family and household characteristics of children that include wealth index, parents' employment status, and parents' working sector, *Yi* is a vector of explanatory variables that shows the characteristics of that include sibling number and birth place, β_0 is the intercept term, β_1- β_6 are the slope coefficient of the father mortality status dummy variable, β_7 is the vector coefficients for family and household characteristics of the children, β_8 is the vector of slope coefficients for the characteristics of the children, ε_i is the error term. $C2_i$ and $C3_i$ stand for the 8th grade and the 12th grade completion rates for children, respectively.

We will use the logit results of the first and second generations to understand. In other words, we try to get a conclusion whether the family's educational background is a determinant of children's education outcomes. Since in the first generation, only

female population is used in the estimation, our estimations in second stage also include the female sample so that we can compare the results over two generations.

CHAPTER 6

RESULTS-Father's Death

In this section, the logit estimation results regarding the probability of completing the 8^{th} and the 12^{th} grades are presented and interpreted respectively. The logit estimation results regarding the dropout rate and logit estimation of leaving home are also demonstrated and interpreted in sub sections of this section.

We cannot analyze the 5^{th} grade completion rate because of the data limitations explained in the 'Data' section. For example, there is only one child who had lost his/her father and did not complete the 5^{th} grade in the relevant sample. We also conduct this analysis by considering place of residence. Unfortunately, apart from the girls who live in urban areas, our main explanatory variable, father's death does not vary in the 5^{th} grade completion rates, therefore it is excluded from our logit model. On the other hand, since the probability of finishing the 5^{th} grade is already close to 100%, this does not create a problem for our analysis. Instead, we are interest in whether the absence of fathers has any effect on subsequent educational life of the children, which are finishing the 8^{th} and the 12^{th} grades.

6.1. The Effect of Father's Death on School Completion Probability

6.1.1. The Effect of Father's Death on Completing 8^{th} Grade

In the first model, we investigate whether or not children who had lost their fathers have lower 8^{th} grade completion rates than children with two alive parents. We have three specifications of the same model. In the first specification, column 1, individual and parental control variables are not included in the model; the only variable included is an indicator variable showing whether the child's father died or not. In the second specification, in column 3, children's control variables are included; and in the third specification, all parental control variables are included in the model. In the fourth specification, just paternal control variables are introduced. For ease of

interpretation, the logit coefficients are transformed into maginal effects. To reiterate, in this specification, we look at children older than 15 who have completed the 5th grade. In addition, if children lost their fathers before they are 15, they are counted as orphans in the specification.

6.1.1.1. The Effect of Father's Loss on Total Sample

The effect of the death of the father on the 8th grade completion is first investigated for the total sample whose ages are 15 or higher and who have completed the 5th grade. To understand the effect of father's death which can be faced at different times of children's lives, we compose two fatherdied dummies. One is to look at only school age period, 6-14, and the second is to look at the overall period, 0-14. So, we can deduce the impact of father's death on 8th grade completion rate if ages of children were less than 6 when their fathers died. However, if fatherdied6_14 dummy takes the value of 1, the fatherdied0_14 dummy also takes the value of 1. Since fatherdied0_14 dummy already includes the fatherdied6_14 dummy, we should find out the joint effects of these two dummies. To achieve this, we make a table, which shows the effects of fatherdied6_14 dummy. We can obtain the marginal effects of fatherdied6_14 dummy in the models by adding marginal effects of fatherdied6_14 and fatherdied0_14 dummy. Table 1 demonstrates us that there is no significant effect of father's death if it happened when a child was less than 6. In all three models, this is valid a conclusion. Table 6.2 demonstrates that fatherdied6_14 dummy is not significant at conventional levels (all p values>0.20).

Number of siblings, being born in a province or district, and education levels of mother and father affect the 8th grade completion probability of children. In all specifications (Column 2 and 3), the probability of completing the 8th grade is nearly 1 percentage point less than the probability of completing the 8th grade for children with one more sibling. If children are born in provinces, their probability of completing the 8th grade increases by 2 percentage points compared to children born in village in the second specification. This effect diminishes and even becomes insignificant in the last model. All parental educational dummies are significant. This is a highly expected result since educated mothers have more financial ability and

may able to support their children's educational development better. Since parents have positive views about education, and therefore they encourage their children to continue their educational life. Moreover, completing some certain educational degrees indicates that parents have intelligence to be able to get that education. This genetic character may also be transmitted to children and children are more likely to continue their educational life. For instance, in model 3, having a mother with higher school increases the probability of completing the 8th grade by 4 percentage points at 5 percentage significance level compared to that of uneducated mothers. This probability is 2 percentage points if fathers graduate from primary and secondary school; 3 percentage points if fathers graduate from higher school.

Table 6. 1: The Probability of Completing the 8th grade, Age≥15, Total

age>=15, total, comp1	(1)	(1)	(2)	(2)	(3)	(3)
VARIABLES	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.
Father's Death, 6≤Age at death≤14	-0.811	-0.059	-0.606	-0.032	-0.425	-0.017
	(1.144)	(0.113)	(1.155)	(0.078)	(1.155)	(0.055)
Father's Death, 0≤Age at death≤14	0.430	0.018	-0.025	-0.001	-0.121	-0.004
	(1.021)	(0.036)	(1.033)	(0.042)	(1.038)	(0.037)
Childhood Characteristics						
Age			-0.071	-0.003	-0.067	-0.002
			(0.045)	(0.002)	(0.045)	(0.001)
Number of Sibling			-0.345***	-0.014***	-0.237***	-0.008***
			(0.033)	(0.001)	(0.042)	(0.002)
Child's Birth Place (Reference Group: Village)						
Province			0.555***	0.021***	0.262	0.008
			(0.185)	(0.007)	(0.186)	(0.006)
District			0.331*	0.012*	0.280	0.008
			(0.191)	(0.007)	(0.197)	(0.006)
Mother's Characteristics						
Mother's Marriage Age					0.012	0.000
					(0.028)	(0.001)
Mother's Education (Reference Group: No Education)						
Primary School					0.459**	0.015**
					(0.180)	(0.006)
Secondary School					0.992*	0.022*
					(0.537)	(0.008)
Higher Education					2.409**	0.038**
					(1.042)	(0.006)

Table 6. 1 (Continued)

age>=15, total, comp1	(1)	(1)	(2)	(2)	(3)	(3)
VARIABLES	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.
Father's Characteristics						
Father's Marriage Age					0.014	0.000
					(0.021)	(0.001)
Father's Education						
(Reference Group: No Education)						
Primary School					0.637***	0.021***
					(0.213)	(0.008)
Secondary School					0.778***	0.020***
					(0.295)	(0.006)
Higher Education					1.197***	0.030***
					(0.352)	(0.008)
Policy			-0.420*	-0.018*	-0.486**	-0.017**
			(0.243)	(0.011)	(0.244)	(0.010)
Constant	2.866***		5.061***		3.303***	
	(0.072)		(0.911)		(1.156)	
(-)Log-Likelihood	808.90		735.50		711.10	
Pseudo R2	0.0004		0.0912		0.1210	
Prob. at mean		0.925		0.946		0.958
Observations	3,850	3,850	3,850	3,850	3,850	3,850

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6. 2: T-test for Joint Significance of Fatherdied Dummies, Total

age>=15, total, comp1	(1)		(2)		(3)	
VARIABLES	8th Grade		8th Grade		8th Grade	
	Coeff.	Mar. Ef.	Coeff.	Mar. Ef.	Coeff.	Mar. Ef.
Joint Significance of Fatherdied	-0.381	-0.041	-0.631	-0.033	-0.546	-0.021
chi2(1)	0.53		1.38		1.06	
Prob > chi2	0.4680		0.2409		0.3021	

6.1.1.2. The Effect of Father's Death on Urban-Rural

The effect of father's death on the 8th grade completion rate is investigated for urban sample whose ages are equal or higher than 15 and completed the 5th grade. The interpretation of fatherdied dummies is similar to the previous case. Indeed, there is negative but insignificant effect of father's loss on the completion probability in all three specifications (p>0.30) (Table 6.4).

Number of siblings is again negatively correlated with completing the 8th grade. This fact is consistent with the quality-quantity trade-off explained in the 'Methodology' section. Even though the coefficient of mother's marriage age is positive and significant at 1 percent, its marginal effect is very small. Mother's education covariates are positive but insignificant in model 3, whereas all covariates of father's education are significant at 1 percent. For example, the probability of completing the 8th grade increases by 3, 3, and 4 percentage points if father graduates from primary, secondary, and higher school respectively compared to that of children with uneducated fathers.

When we look at the rural population, we do not have enough observations to make the analysis because completing the 8th grade has very little variation. For instance, only two children who lost their father did not complete the 8th grade. Because of this reason, logit models cannot give proper results. Hence, we ignore this case.

Table 6. 3: The Probability of Completing the the 8th grade, Age≥15, Urban

age>=15, urban, comp1	(1)	(1)	(2)	(2)	(3)	(3)
VARIABLES	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.
Father's Death, 6≤Age at death≤14	-0.417	-0.021	-0.280	-0.011	-0.024	-0.001
	(1.257)	(0.074)	(1.251)	(0.055)	(1.283)	(0.039)
Father's Death, 0≤Age at death≤14	-0.019	-0.001	-0.446	-0.019	-0.367	-0.013
	(1.027)	(0.043)	(1.034)	(0.052)	(1.047)	(0.043)
Childhood Characteristics						
Age			-0.078	-0.003	-0.082	-0.002
			(0.057)	(0.002)	(0.052)	(0.002)
Number of Sibling			-0.344***	-0.012***	-0.225***	-0.007***
			(0.047)	(0.002)	(0.055)	(0.002)

Table 6. 3 (Continued)

age>=15, urban, comp1	(1)	(1)	(2)	(2)	(3)	(3)
VARIABLES	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.
Child's Birth Place						
(Reference Group: Village)						
Province			0.375	0.013	0.145	0.004
			(0.278)	(0.010)	(0.273)	(0.008)
District			0.083	0.003	0.111	0.003
			(0.278)	(0.009)	(0.279)	(0.008)
Mother's Characteristics						
Mother's Marriage Age					0.058	0.002
					(0.036)	(0.001)
Mother's Education						
(Reference Group: No Education)						
Primary School					0.015	0.000
					(0.220)	(0.007)
Secondary School					0.765	0.017
					(0.613)	(0.010)
Father's Characteristics						
Father's Marriage Age					0.020	0.001
					(0.026)	(0.001)
Father's Education						
(Reference Group: No Education)						
Primary School					1.032***	0.032***
					(0.264)	(0.009)
Secondary School					1.407***	0.028***
					(0.403)	(0.006)
Higher Education					1.694***	0.039***
					(0.368)	(0.007)
Policy			-0.318	-0.012	-0.418	-0.014
			(0.326)	(0.013)	(0.318)	(0.011)
Constant	3.110***		5.338***		2.605*	
	(0.096)		(1.183)		(1.359)	
(-)Log-Likelihood	478.5		448.0		429.9	
Pseudo R2	0.0003		0.0640		0.102	
Prob. at mean		0.942		0.956		0.953
Observations	2,701	2,701	2,701	2,701	2,701	2,701

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 6. 4: T-test for Joint Significance of Fatherdied Dummies, Urban

age>=15, urban, comp1	(1)		(2)		(3)	
Test	8th Grade		8th Grade		8th Grade	
	Coeff.	Mar. Ef.	Coeff.	Mar. Ef.	Coeff.	Mar. Ef.
Joint Significance of Fatherdied	-0.436	-0.022	-0.726	-0.03	-0.391	-0.014
chi2(1)	0.35		0.97		0.27	
Prob > chi2	0.5544		0.3258		0.6064	

6.1.1.3. The Effect of Father's Death on Boys-Girls

When the analysis is redone for just boys who live in both urban and rural areas, the significance of fatherdied dummies can be seen in Table 6.5. It is seen that when a boy loses his father at the age of 6-14, the probability of completing the 8^{th} grade reduces by 8 percentage points in the first model. This probability decreases to 5.5 percentage points in the third model, where all covariates are included. Table 6.5 demonstrates that there is negative but no significant effect of losing father before the school age, 6. In fact, in all three models, losing father in school age period decreases the probability of finishing the 8^{th} grade at 5 percent significance level (all p values<0.05). These findings make sense in Turkey since boys are seen as a bread earner and head of the house after the father's death. Girls are not expected to work and they probably can continue their educational life. In other words, the opportunity cost of boys' time is higher than that of girls.

Similar to other groups, having one more sibling decreases the probability of completing the 8^{th} grade. Mother's education dummies are not significant in model 3. The coefficient of father's marriage age is positive and significant at 5 percent. Since its marginal effect is very small, it is not important. If fathers marry at late ages, their children are more likely to complete higher grades. Moreover, the probability of completing the 8^{th} grade increases by 3, 3, and 4 percentage points if father graduates from primary, secondary, and higher school respectively compared to that of children with uneducated fathers.

When we look at the girls, we do not have enough variation in the dependent variable to respect in analysis for them. Only two children who had lost their fathers do not complete the 8th grade. Hence, there is not enough variation in data to run the analysis for girls.

Table 6. 5: The Probability of Completing the 8th grade, Age≥15, Boys

age>=15, boy, comp1	(1)	(1)	(2)	(2)	(3)	(3)
VARIABLES	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.
Father's Death, 6≤Age at death≤14	-0.860	-0.057	-0.806	-0.044	-0.563	-0.022
	(1.172)	(0.109)	(1.189)	(0.090)	(1.176)	(0.058)
Father's Death, 0≤Age at death≤14	-0.456	-0.025	-0.743	-0.040	-0.778	-0.033
	(1.043)	(0.069)	(1.065)	(0.076)	(1.044)	(0.061)
Childhood Characteristics						
Age			-0.129**	-0.005**	-0.133**	-0.004**
			(0.060)	(0.002)	(0.061)	(0.002)
Number of Sibling			-0.267***	-0.010***	-0.152**	-0.004**
			(0.045)	(0.002)	(0.060)	(0.002)
Child's Birth Place (Reference Group: Village)						
Province			0.439*	0.016*	0.098	0.003
			(0.261)	(0.009)	(0.263)	(0.008)
District			0.317	0.011	0.261	0.007
			(0.269)	(0.009)	(0.275)	(0.007)
Mother's Characteristics						
Mother's Marriage Age					-0.017	-0.001
					(0.039)	(0.001)
Mother's Education (Reference Group: No Education)						
Primary School					0.161	0.005
					(0.251)	(0.007)
Secondary School					1.365	0.024
					(1.038)	(0.010)
Higher Education					1.381	0.025
					(1.079)	(0.011)
Father's Characteristics						
Father's Marriage Age					0.062**	0.002**
					(0.032)	(0.001)

Table 6.5 (Continued)

age>=15, boy, comp1	(1)	(1)	(2)	(2)	(3)	(3)
VARIABLES	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.
Father's Education						
(Reference Group: No Education)						
Primary School					0.880***	0.028***
					(0.288)	(0.010)
Secondary School					1.679***	0.031***
					(0.497)	(0.007)
Higher Education					1.754***	0.035***
					(0.530)	(0.008)
Policy			-0.711**	-0.031**	-0.884**	-0.032**
			(0.359)	(0.018)	(0.363)	(0.016)
Constant	3.021***		6.178***		3.945**	
	(0.103)		(1.233)		(1.603)	
(-)Log-Likelihood	415.2		391.0		370.7	
Pseudo R2	0.0053		0.0631		0.1120	
Prob. at mean		0.942		0.951		0.961
Observations	2,169	2,169	2,169	2,169	2,169	2,169

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6. 6: T-test for Joint Significance of Fatherdied Dummies, Boys

age>=15, boy, comp1	(1)		(2)		(3)	
VARIABLES	8th Grade		8th Grade		8th Grade	
	Coeff.	Mar. Ef.	Coeff.	Mar. Ef.	Coeff.	Mar. Ef.
Joint Significance of Fatherdied	-1.316	-0.082	-1.549	-0.084	-1.341	-0.055
chi2(1)	5.66		7.40		5.28	
Prob > chi2	0.0174		0.0065		0.0216	

6.1.1.4. The Effect of Father's Death on Urban Boys

In this part, the analysis is redone for urban boys whose ages 15 or higher and graduated from the 5th grade. Table 6.7 shows whether or not there is a significant effect of fatherdied6_14 dummy on completing the 8th grade. The negative and significant effect is captured by only model 2. In model 2, losing father in school ages decreases the probability of finishing the 8th grade by 8 percentage points at 5 percent significance level (p=0.04). However, adding parental variables wipes out the significance of father's death dummies. In fact, we already anticipate this result. Even though father' death dummies are all negative for 'urban' specification (Table 6.3), we find signifince for 'urban boy' specification in only two models (Table 6.7-6.8). The explanation is the same with 'boy' specification. After death of fathers, somebody in family should earn money as an substitute for father. Generally, boys are considered close substitute for fathers and this leads to giving up going to school in most cases. Moreover, we thought that the opportunity cost of time of boys are much more valuable in urban areas. In other words, boys in rural areas can continue their education while they do farmwork. On the other hand, in urban areas, there is a sharp distinction between the school time and work time. In addition, continuing school can be expensive in urban areas because of transportation expenses unless they go to school in a different distinct. However, in rural areas, such expenses can be rather low if the village has school or free bussing facilities.

When we look at other covariates, the negative relationship between number of siblings and the 8th grade completion probability is no longer important in Model 3. While all mother's control variables are insignificant, all father's control variables are significant at 1 percent significance level. For example, the probability of completing the 8th grade for children with educated father is 4% higher than that for children with uneducated fathers.

Table 6. 7: The Probability of Completing the 8th Grade, Age≥15, Urban Boys

age>=15, boy-urban-comp1	(1)	(1)	(2)	(2)	(3)	(3)
VARIABLES	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.
Father's Death, 6≤Age at death≤14	-0.452	-0.022	-0.562	-0.025	0.001	0.000
	(1.290)	(0.077)	(1.319)	(0.075)	(1.251)	(0.032)
Father's Death, 0≤Age at death≤14	-0.748	-0.042	-0.956	-0.051	-0.839	-0.032
	(1.053)	(0.080)	(1.102)	(0.086)	(1.067)	(0.058)
Childhood Characteristics						
Age			-0.087	-0.003	-0.089	-0.002
			(0.074)	(0.003)	(0.074)	(0.002)
Number of Sibling			-0.278***	-0.010***	-0.129	-0.003
			(0.065)	(0.002)	(0.096)	(0.002)
Child's Birth Place (Reference Group: Village)						
Province			0.491	0.018	0.217	0.006
			(0.372)	(0.014)	(0.369)	(0.010)
District			0.299	0.010	0.302	0.007
			(0.365)	(0.011)	(0.382)	(0.009)
Mother's Characteristics						
Mother's Marriage Age					-0.003	-0.000
					(0.052)	(0.001)
Mother's Education (Reference Group: No Education)						
Primary School					-0.234	-0.006
					(0.329)	(0.009)
Secondary School					0.843	0.016
					(1.041)	(0.013)
Father's Characteristics						
Father's Marriage Age					0.100**	0.003**
					(0.049)	(0.001)
Father's Education (Reference Group: No Education)						
Primary School					1.257***	0.035***
					(0.392)	(0.012)
Secondary School					2.689***	0.036***
					(0.805)	(0.006)
Higher Education					2.027***	0.038***
					(0.564)	(0.009)

Table 6.7 (Continued)

age>=15, boy-urban-comp1	(1)	(1)	(2)	(2)	(3)	(3)
VARIABLES	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.
Policy			-0.116	-0.004	-0.264	-0.007
			(0.472)	(0.017)	(0.479)	(0.014)
Constant	3.145***		5.194***		1.600	
	(0.131)		(1.502)		(2.070)	
(-)Log-Likelihood	263.6		250.3		231.5	
Pseudo R2	0.0042		0.0546		0.126	
Prob. at mean		0.958		0.964		0.966
Observations	1,506	1,506	1,506	1,506	1,506	1,506

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, *p<0.1

Table 6. 8: T-test for Joint Significance of Fatherdied Dummies, Urban Boys

age>=15, boy-urban-comp1	(1)		(2)		(3)	
Test	8th Grade		8th Grade		8th Grade	
	Coeff.	Mar. Ef.	Coeff.	Mar. Ef.	Coeff.	Mar. Ef.
Joint Significance of Fatherdied	-1.200	-0.064	-1.518	-0.076	-0.838	-0.032
chi2(1)	2.44		3.91		1.53	
Prob > chi2	0.1180		0.0480		0.2166	

We cannot conduct a similar analysis for urban girls, rural boys, and rural girls since we have small number of observations. For example, we have only one urban girl who had lost her father and does not complete the 8th grade. Therefore, we cannot run logit estimation. For boys in rural areas, we have only two children who had lost their parents did not complete the 8th grade.

6.1.2. The Effect of Father's Death on Completing the 12th Grade

In this section, the impact of paternal loss on completing the 12th grade is examined. In this educational level, our observations are composed of children whose ages

higher than 18, and who have completed the 8th grade. The definition of orphan-hood is also changed accordingly. In order to be counted as orphans, children should face father loss before the age 18. Similar to 8th grade analysis, there are two dummies representing the time of father's loss: one is fatherdied6_18 and second one is fatherdied0_18 in the models. Again, there are three specifications which are the same in the previous section.

6.1.2.1. The Effect of Father's Death on Total Sample

In this subsection, the effect is examined for the total sample covering children older than 18, and who have completed the 8th grade, including boys, girls, urban, and rural residents. When we look at Table 6.10, we can see negative signs of father's death dummies, which indicate there is negative relationship between father's death and completion probability; but these coefficients are all insignificant. To detect the effect of father's loss which happened when the children were older than 6, the joint significance test is applied (Table 6.10). We find out that there is no effect of father's loss on this group ($p>0.20$).

If we look at the other covariates, we notice the negative relationship between the number of siblings and the 12th grade completion rate. In fact, having one more sibling decreases the probability of completing the 12th grade by 6 percentage points and 4 percentage points in the second and third models, respectively. In the last model, being born in a province or district increases the probability of completing the 12th grade by 6 percentage points and 10 percentage points respectively, relative to that of children born in a village. All mother's educational dummies are significant at 1 percent. For instance, the probability of completing the 12th grade is 10 percentage points and 20 percentage points higher if children's mothers have primary school diploma and secondary and higher school diploma than that of children with uneducated mothers, respectively. In regards to paternal educational dummies, having a father with higher education increases the probability of completing the 12th grade by 14 percentage points relative to that with uneducated fathers at 5 percent significance level.

Table 6. 9: The Probability of Completing the 12th Grade, Age≥19, Total

age>=19, total, comp2	(1)	(1)	(2)	(2)	(3)	(3)
VARIABLES	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.
Father's Death, 6≤Age at death≤18	-0.424	-0.102	-0.141	-0.035	-0.058	-0.014
	(0.704)	(0.162)	(0.695)	(0.169)	(0.749)	(0.185)
Father's Death, 0≤Age at death≤18	-0.028	-0.007	-0.289	-0.070	-0.310	-0.075
	(0.608)	(0.151)	(0.585)	(0.139)	(0.642)	(0.152)
Childhood Characteristics						
Age			0.133***	0.033***	0.140***	0.035***
			(0.033)	(0.008)	(0.034)	(0.008)
Number of Sibling			-0.236***	-0.059***	-0.154***	-0.038***
			(0.035)	(0.009)	(0.038)	(0.009)
Child's Birth Place (Reference Group: Village)						
Province			0.527***	0.130***	0.244*	0.060*
			(0.125)	(0.031)	(0.132)	(0.033)
District			0.547***	0.136***	0.418***	0.104***
			(0.142)	(0.035)	(0.146)	(0.036)
Mother's Characteristics						
Mother's Marriage Age					0.018	0.004
					(0.020)	(0.005)
Mother's Education (Reference Group: No Education)						
Primary School					0.382***	0.094***
					(0.136)	(0.033)
Secondary School					0.812***	0.199***
					(0.261)	(0.060)
Higher Education					0.819***	0.201***
					(0.244)	(0.057)
Father's Characteristics						
Father's Marriage Age					0.021	0.005
					(0.015)	(0.004)
Father's Education (Reference Group: No Education)						
Primary School					-0.002	-0.001
					(0.210)	(0.052)
Secondary School					0.066	0.016
					(0.243)	(0.061)

Table 6. 9 (Continued)

age>=19, total, comp2	(1)	(1)	(2)	(2)	(3)	(3)
VARIABLES	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.
Higher Education					0.579**	0.144**
					(0.234)	(0.057)
Constant	-0.154***		-2.799***		-4.276***	
	(0.052)		(0.718)		(0.889)	
(-)Log-Likelihood	1063.0		1010.0		982.1	
Pseudo R2	0.0008		0.0501		0.0767	
Prob. at mean		0.459		0.454		0.455
Observations	1542	1542	1542	1542	1542	1542

Robust standard errors in parentheses
*** p<0.01, ** p<0.05,* p<0.1

Table 6. 10:T-test for Joint Significance of Fatherdied Dummies, Total

age>=19, total, comp2	(1)		(2)		(3)	
VARIABLES	12th Grade		12th Grade		12th Grade	
	Coeff.	Mar. Ef.	Coeff.	Mar. Ef.	Coeff.	Mar. Ef.
Joint Significance of Fatherdied	-0.452	-0.109	-0.43	-0.105	-0.368	-0.089
chi2(1)	1.55		1.29		1.06	
Prob > chi2	0.2125		0.2568		0.3456	

6.1.2.2. The Effect of Father's Death by Urban/Rural Residence

The analysis is repeated for urban population to figure out whether or not the bereavement of father has any effect on children's the 12^{th} grade completion probability. Both Table 6.11 and Table 6.12 demonstrate that there is not any significant effect of father's death dummies on that school level (all p values>0.17). This result is consistent with what we found in the 8^{th} grade completion rates.

Table 6.11 presents the results of third specifications. Having one more sibling in the house decreases the probability of completing the 12th grade by 3 percentage points in the last model. All mother's education dummies are significant. For instance, the probability of completing the 12th grade for children with higher educated mothers is 17 percentage points higher than that of children with uneducated mothers. Similarly, if fathers have higher education, the probability of completing the 12th grade is 14 percentage points greater than that of children with uneducated fathers in the last specification.

The analysis cannot be repeated for rural sample whose ages are higher than 18 since there is a problem of lack of observation in this special subset. Indeed, there are two orphans who completed the 12th grade. For a reliability of estimation, we ignore this case.

Table 6. 11: The Probability of Completing the 12th Grade, Age≥19, Urban

age>=19, urban, comp2	(1)	(1)	(2)	(2)	(3)	(3)
VARIABLES	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.
Father's Death, 6≤Age at death≤18	-0.531	-0.130	-0.279	-0.069	-0.126	-0.031
	(0.748)	(0.175)	(0.728)	(0.179)	(0.813)	(0.203)
Father's Death, 0≤Age at death≤18	-0.022	-0.006	-0.231	-0.057	-0.304	-0.076
	(0.636)	(0.159)	(0.604)	(0.149)	(0.700)	(0.172)
Childhood Characteristics						
Age			0.151***	0.038***	0.162***	0.041***
			(0.039)	(0.010)	(0.040)	(0.010)
Number of Sibling			-0.222***	-0.056***	-0.134***	-0.034***
			(0.042)	(0.010)	(0.047)	(0.012)
Child's Birth Place (Reference Group: Village)						
Province			0.233	0.058	-0.012	-0.003
			(0.178)	(0.044)	(0.184)	(0.046)
District			0.318*	0.079*	0.234	0.058
			(0.192)	(0.048)	(0.197)	(0.049)
Mother's Characteristics						
Mother's Marriage Age					0.031	0.008
					(0.024)	(0.006)

Table 6.11 (Continued)

age>=19, urban, comp2	(1)	(1)	(2)	(2)	(3)	(3)
VARIABLES	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.
Mother's Education						
(Reference Group: No Education)						
Primary School					0.291*	0.073*
					(0.165)	(0.041)
Secondary School					0.963***	0.226***
					(0.295)	(0.061)
Higher Education					0.732***	0.177***
					(0.267)	(0.061)
Father's Characteristics						
Father's Marriage						
Age					0.025	0.006
					(0.018)	(0.004)
Father's Education						
(Reference Group: No Education)						
Primary School					0.030	0.008
					(0.263)	(0.066)
Secondary School					0.185	0.046
					(0.302)	(0.075)
Higher Education					0.545*	0.135*
					(0.281)	(0.068)
Constant	0.022		-2.908***		-4.828***	
	(0.061)		(0.852)		(1.055)	
(-)Log-Likelihood	771.9		745.5		721.9	
Pseudo R2	0.0013		0.0353		0.0659	
Prob. at mean		0.502		0.501		0.503
Observations	1115	1115	1115	1115	1115	1115

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6. 12: T-test for Joint Significance of Fatherdied Dummies, Urban

age>=19, urban, comp2	(1)		(2)		(3)	
VARIABLES	12th Grade		12th Grade		12th Grade	
	Coeff.	Mar. Ef.	Coeff.	Mar. Ef.	Coeff.	Mar. Ef.
Joint Significance of Fatherdied	-0.553	-0.136	-0.51	-0.126	-0.43	-0.107
chi2(1)	1.88		1.52		1.04	
Prob > chi2	0.1704		0.2180		0.3088	

6.1.2.3. The Effect of Father's Death on Boys-Girls

In the 12th grade completion rate for boys, even though the coefficient of fatherdied0_18 is insignificant, which means there is no effect of father's loss if the children face death before they are 6, the joint significance test shows us that fatherdied6_18 dummy is significant in all three models. This implies that if children lose their father in their school ages, this will affect probability of finishing the 12th grade negatively (all p values<0.10). Specifically, in the second model, the probability of completing the 12th grade decreases by 25 percentage points if children had faced father's death in their school ages (p=0.05). The significance level increases when we add additional covariates into the model. However, there is still significant and negative effect of fatherdied6_18 dummy on completing the 12th grade in the full model. The probability of completing the 12th grade is 28 percentage points lower than that of children with two parents. Although this relatively huge marginal effects which may be resulted from influential outliers could distort the reliability of results, the results are consistent with the 8th grade completion rate. The explanation is the same. Boys are seen as a bread earner rather than girls. Their time is much more valuable than that of girls. This leads to a decrease in school participation. Also, presence of father may encourage boys to proceed in their education as they may see their father as a role model and guide in their life.

Table 6.13 shows the estimates for boys whose ages are higher than 18. Having one more sibling decreases the probability of completing the 12th grade by nearly 3 percentage points. All mother's education dummies are significant at 10 percent. For instance, having secondary school graduate mother increases the probability of completing the 12th grade by 15 percentage points. Father's marriage age is also positively correlated with completing the 12th grade. One year increase in father's marriage age increases the probability of completing the 12th grade by 1 percentage points. Only higher education dummy is significant in the models. Having higher educated fathers increases the probability of completing the 12th grade by 15 percentage points.

Table 6. 13: The Probability of Completing the 12th Grade, Age≥19, Boys

age>=19, boy, comp2	(1)	(1)	(2)	(2)	(3)	(3)
VARIABLES	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.
Father's Death, 6≤Age at death≤18	-1.540	-0.263	-1.348	-0.237	-1.183	-0.216
	(1.186)	(0.123)	(1.217)	(0.142)	(1.251)	(0.162)
Father's Death, 0≤Age at death≤18	0.095	0.022	-0.179	-0.040	-0.299	-0.066
	(0.916)	(0.219)	(0.950)	(0.209)	(0.948)	(0.198)
Childhood Characteristics						
Age			0.112***	0.026***	0.129***	0.030***
			(0.042)	(0.010)	(0.044)	(0.010)
Number of Sibling			-0.193***	-0.045***	-0.127***	-0.029***
			(0.044)	(0.010)	(0.048)	(0.011)
Child's Birth Place (Reference Group: Village)						
Province			0.440***	0.103***	0.186	0.043
			(0.162)	(0.038)	(0.172)	(0.040)
District			0.311*	0.073*	0.206	0.048
			(0.181)	(0.043)	(0.187)	(0.044)
Mother's Characteristics						
Mother's Marriage Age					0.019	0.004
					(0.025)	(0.006)
Mother's Education (Reference Group: No Education)						
Primary School					0.286*	0.066*
					(0.171)	(0.039)
Secondary School					0.623*	0.152*
					(0.353)	(0.088)
Higher Education					0.582*	0.141*
					(0.322)	(0.080)

Table 6.13 (Continued)

age>=19, boy, comp2	(1)	(1)	(2)	(2)	(3)	(3)
VARIABLES	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.
Father's Characteristics						
Father's Marriage Age					0.037**	0.008**
					(0.018)	(0.004)
Father's Education (Reference Group: No Education)						
Primary School					-0.100	-0.023
					(0.261)	(0.060)
Secondary School					-0.033	-0.008
					(0.307)	(0.070)
Higher Education					0.643**	0.154**
					(0.297)	(0.073)
Constant	-0.500***		-2.697***		-4.579***	
	(0.067)		(0.915)		(1.153)	
(-)Log-Likelihood	629.2		607		588.5	
Pseudo R2	0.0040		0.0391		0.0684	
Prob. at mean		0.372		0.364		0.363
Observations	1542	1542	1542	1542	1542	1542

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6. 14: T-test for Joint Significance of Fatherdied Dummies, Boys

age>=19, boy, comp2	(1)		(2)		(3)	
VARIABLES	12th Grade		12th Grade		12th Grade	
	Coeff.	Mar. Ef.	Coeff.	Mar. Ef.	Coeff.	Mar. Ef.
Joint Significance of Fatherdied	-1.445	-0.241	-1.527	-0.277	-1.482	-0.282
chi2(1)	3.63		4.00		3.32	
Prob > chi2	0.0569		0.0455		0.0683	

The analysis is done again for just girls whose ages are higher than 18. The results display that father's death has no effect on completing the 12th grade in all specifications (all p values>0.70). This can be expected since sending girls to school can be relatively less costly for mothers because its opportunity cost is relatively small than that of boys. In other words, the wage that girls can earn probably is lower than the wages which boys can earn in the labor market. In addition, role model of girls is generally mothers rather than fathers. Mother's presence can strongly and psychologically affect the girls's educational development. Therefore, father's absence may not result in school failures for girls.

Table 6.15 indicates the estimation results for girls. Number of sibling is negatively correlated with the 12th grade completion probability. Being born in district compared to village increases the probability of completing the 12th grade by 19 percentage points. Having secondary school graduate mothers increases the probability of completing this grade by 16 percentage points compared to that of children with uneducated mothers. Father's educational dummies are insignificant. This confirms our expectations related to girls in mother-girls role model framework. Since, in many researches, intergenerational correlations between mothers and their offspring have been found to be higher for daughters than for sons (Bowles and Gintis, 2002)

Table 6. 15: The Probability of Completing the 12th Grade, Age≥19, Girls

age>=19, girl, comp2	(1)	(1)	(2)	(2)	(3)	(3)
VARIABLES	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.
Father's Death, 6≤Age at death≤18	0.223	0.052	0.605	0.133	0.558	0.123
	(0.945)	(0.215)	(0.854)	(0.167)	(0.886)	(0.176)
Father's Death, 0≤Age at death≤18	-0.411	-0.101	-0.662	-0.163	-0.548	-0.135
	(0.822)	(0.205)	(0.672)	(0.166)	(0.714)	(0.178)
Childhood Characteristics						
Age			0.223***	0.053***	0.219***	0.052***
			(0.062)	(0.015)	(0.062)	(0.015)
Number of Sibling			-0.303***	-0.072***	-0.234***	-0.056***
			(0.063)	(0.015)	(0.067)	(0.016)

Table 6.15 (Continued)

age>=19, girl, comp2	(1)	(1)	(2)	(2)	(3)	(3)
VARIABLES	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.
Child's Birth Place						
(Reference Group: Village)						
Province			0.568***	0.134***	0.348	0.082
			(0.206)	(0.048)	(0.220)	(0.052)
District			0.949***	0.208***	0.863***	0.191***
			(0.252)	(0.050)	(0.260)	(0.052)
Mother's Characteristics						
Mother's Marriage						
Age					0.014	0.003
					(0.036)	(0.009)
Mother's Education (Reference Group: No Education)						
Primary School					0.297	0.071
					(0.245)	(0.059)
Secondary School					0.749*	0.161*
					(0.429)	(0.080)
Higher Education					0.894**	0.190**
					(0.396)	(0.072)
Father's Characteristics						
Father's Marriage						
Age					0.004	0.001
					(0.027)	(0.006)
Father's Education						
(Reference Group: No Education)						
Primary School					0.198	0.047
					(0.387)	(0.092)
Secondary School					0.276	0.064
					(0.433)	(0.097)
Higher Education					0.405	0.094
					(0.416)	(0.094)
Constant	0.411***		-4.112***		-4.964***	
	(0.086)		(1.309)		(1.550)	
(-)Log-Likelihood	394.4		363.0		357.4	
Pseudo R2	0.0005		0.0801		0.0944	
Prob. at mean		0.599		0.608		0.611
Observations	586	586	586	586	586	586

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 6. 16: T-test for Joint Significance of Fatherdied Dummies, Girls

age>=19, girl, comp2	(1)		(2)		(3)	
VARIABLES	12th Grade		12th Grade		12th Grade	
	Coeff.	Mar. Ef.	Coeff.	Mar. Ef.	Coeff.	Mar. Ef.
Joint Significance of Fatherdied	-0.188	-0.049	-0.057	-0.03	0.01	-0.012
chi2(1)	0.15		0.01		0.00	
Prob > chi2	0.6964		0.9150		0.9848	

6.1.2.4. The Effect of Father's Death on Urban Boys, Urban Girls, Rural Boys, and Rural Girls

Similar to the 8th grade completion analysis, losing father when the child is younger than 6 has negative but insignificant effect on the 12th grade completion. On the other hand, losing father when the child is older than 6 has negative and significant effect on completion (all p values<0.06). For urban boys, in the second model, losing father decreases the probability of completing the 12th grade by 38 percentage points at 5 percent significance level. In fact, these marginal effects are really high. This may come from the small number of observations which are presented in the 'Data' section. However, we have a second analysis to check our findings in this regard. In dropout analysis, it can be seen that the same effect is found but the analysis provides relatively low marginal effects for high school dropout rates.

The estimation results are given in Table 6.17. In Model 3, one year increase in mother's marriage age increases the probability of completing the 12th grade by 1 percentage points. Having higher educated mothers increases the probability of completing the 12th grade by 14 percentage points compared to that of uneducated mothers. The estimated effect is 16 percentages for the dummy variable for father's higher education.

Table 6. 17: The Probability of Completing the 12th Grade, Age≥19, Urban Boys

age>=19, boy-urban-comp2	(1)	(1)	(2)	(2)	(3)	(3)
VARIABLES	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.
Father's Death, 6≤Age at death≤18	-1.897	-0.323	-1.750	-0.307	-1.610	-0.291
	(1.391)	(0.127)	(1.350)	(0.136)	(1.406)	(0.155)
Father's Death, 0≤Age at death≤18	-0.093	-0.022	-0.324	-0.076	-0.417	-0.096
	(0.917)	(0.219)	(0.906)	(0.203)	(0.928)	(0.201)
Childhood Characteristics						
Age			0.133***	0.032***	0.152***	0.037***
			(0.049)	(0.012)	(0.051)	(0.012)
Number of Sibling			-0.169***	-0.041***	-0.084	-0.020
			(0.052)	(0.013)	(0.059)	(0.014)
Child's Birth Place (Reference Group: Village)						
Province			0.131	0.032	-0.062	-0.015
			(0.226)	(0.055)	(0.232)	(0.056)
District			0.058	0.014	0.015	0.004
			(0.242)	(0.059)	(0.247)	(0.060)
Mother's Characteristics						
Mother's Marriage Age					0.024	0.006
					(0.030)	(0.007)
Mother's Education (Reference Group: No Education)						
Primary School					0.278	0.067
					(0.205)	(0.049)
Secondary School					0.706*	0.174*
					(0.397)	(0.097)
Higher Education					0.582*	0.144*
					(0.345)	(0.085)
Father's Characteristics						
Father's Marriage Age					0.037	0.009
					(0.023)	(0.006)

Table 6. 17 (Continued)

age>=19, boy-urban-comp2	(1)	(1)	(2)	(2)	(3)	(3)
VARIABLES	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.
Father's Education						
(Reference Group: No Education)						
Primary School					-0.020	-0.005
					(0.322)	(0.078)
Secondary School					0.109	0.026
					(0.380)	(0.093)
Higher Education					0.658*	0.162*
					(0.351)	(0.086)
Constant	-0.312***		-2.854***		-5.049***	
	(0.079)		(1.070)		(1.348)	
(-)Log-Likelihood	459.6		449.2		434.6	
Pseudo R2	0.0064		0.0290		0.0606	
Prob. at mean		0.415		0.411		0.410
Observations	681	681	681	681	681	681

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6. 18: T-test for Joint Significance of Fatherdied Dummies, Urban Boys

age>=19, boy-urban-comp2	(1)		(2)		(3)	
VARIABLES	12th Grade		12th Grade		12th Grade	
	Coeff.	Mar. Ef.	Coeff.	Mar. Ef.	Coeff.	Mar. Ef.
test fatherdied6_18 + fatherdied0_18 = 0	-1.990	-0.355	-2.074	-0.383	-2.027	-0.387
chi2(1)	3.58		4.29		3.71	
Prob > chi2	0.0586		0.0384		0.0542	

Since all orphans older than 18 and who live in rural areas have lost their fathers when they were older than 6 years old, we have one fatherdied dummy in Table 6.19. The effect is not significant in all three specifications. This may resulted from the fact that all costs including opportunity costs of going to school or monetary cost of

going to school are lower than that of urban areas. For example, a boy can simultaneously work in the family's farmland and continue his education. Therefore, the opportunity cost of going to school is relatively low. Among all children's and paternal covariates, significant relationship can be seen only in number of siblings and father's marriage age. One year increase in father's marriage age will increase the probability of completing the 12th grade by 1 percentage points.

Table 6. 19: The Probability of Completing the 12th Grade, Age≥19, Rural Boys

age>=19, rural boy, comp2	(1)	(1)	(2)	(2)	(3)	(3)
VARIABLES	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.
Father's Death, 6≤Age at death≤18	-0.375	-0.067	-0.318	-0.055	-0.366	-0.061
	(1.129)	(0.181)	(1.147)	(0.180)	(1.178)	(0.176)
Childhood Characteristics						
Age			0.009	0.002	0.013	0.002
			(0.087)	(0.016)	(0.092)	(0.017)
Number of Sibling			-0.315***	-0.059***	-0.311***	-0.057***
			(0.089)	(0.016)	(0.096)	(0.017)
Child's Birth Place (Reference Group: Village)						
Province			-0.082	-0.015	-0.387	-0.064
			(0.767)	(0.137)	(0.748)	(0.111)
District			-0.219	-0.039	-0.430	-0.072
			(0.483)	(0.082)	(0.547)	(0.082)
Mother's Characteristics						
Mother's Marriage Age					0.027	0.005
					(0.049)	(0.009)
Mother's Education (Reference Group: No Education)						
Primary School					0.292	0.054
					(0.332)	(0.061)
Secondary School					0.546	0.112
					(0.814)	(0.184)
Higher Education					0.649	0.136
					(1.151)	(0.269)
Father's Characteristics						
Father's Marriage Age					0.046	0.008
					(0.031)	(0.006)

Table 6. 20 (Continued)

age>=19, rural boy, comp2	(1)	(1)	(2)	(2)	(3)	(3)
VARIABLES	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.
Father's Education						
(Reference Group: No Education)						
Primary School					-0.667	-0.125
					(0.466)	(0.089)
Secondary School					-0.552	-0.091
					(0.558)	(0.082)
Higher Education					0.217	0.041
					(0.657)	(0.131)
Constant	-1.012***		-0.488		-1.856	
	(0.138)		(1.844)		(2.249)	
(-)Log-Likelihood	159.1		150.9		146.3	
Pseudo R2	0.0004		0.0515		0.0805	
Prob. at mean		0.265		0.247		0.243
Observations	275	275	275	275	275	275

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

In Tables 6.20 and 6.21, the father's death has no effect on completing the 12th grade for urban girls. Both fatherdied0_14 and fatherdied6_14 dummies are insignificant in all three specifications. This result is consistent with the other results since we have already found in Table 6.11 and Table 6.15 that the father's death has no effect on urban or girls in general. Therefore, it is expected to find no significant effect on the loss of father on urban girls.

Table 6.20 represents the estimation results for urban girls. Birth place of children and mother's secondary school education dummy are significant in these estimations. In the last model, having secondary school graduate mother increases the probability of completing the 12th grade by 18 percentage points. Also, being born in district compared to village increases the completion probability by 16 percentage points.

Table 6. 20: The Probability of Completing the 12th Grade, Age≥19, Urban Girls

age>=19, urban girl, comp2	(1)	(1)	(2)	(2)	(3)	(3)
VARIABLES	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.
Father's Death, 6≤Age at death≤18	-0.154	-0.036	0.171	0.038	0.333	0.071
	(1.044)	(0.250)	(0.902)	(0.195)	(0.997)	(0.201)
Father's Death, 0≤Age at death≤18	-0.167	-0.039	-0.343	-0.081	-0.386	-0.091
	(0.920)	(0.221)	(0.706)	(0.172)	(0.830)	(0.203)
Childhood Characteristics						
Age			0.230***	0.052***	0.231***	0.052***
			(0.074)	(0.017)	(0.074)	(0.017)
Number of Sibling			-0.322***	-0.074***	-0.270***	-0.061***
			(0.078)	(0.018)	(0.085)	(0.019)
Child's Birth Place (Reference Group: Village)						
Province			0.386	0.089	0.129	0.029
			(0.303)	(0.070)	(0.329)	(0.075)
District			0.874**	0.184**	0.771**	0.163**
			(0.344)	(0.066)	(0.363)	(0.071)
Mother's Characteristics						
Mother's Marriage Age					0.043	0.010
					(0.043)	(0.010)
Mother's Education (Reference Group: No Education)						
Primary School					0.018	0.004
					(0.306)	(0.069)
Secondary School					0.937*	0.181*
					(0.513)	(0.080)
Higher Education					0.634	0.132
					(0.446)	(0.084)
Father's Characteristics						
Father's Marriage Age					0.021	0.005
					(0.031)	(0.007)
Father's Education (Reference Group: No Education)						
Primary School					0.271	0.061
					(0.494)	(0.111)
Secondary School					0.360	0.078
					(0.543)	(0.112)
Higher Education					0.325	0.072
					(0.512)	(0.111)

Table 6. 20 (Continued)

age>=19, urban girl, comp2	(1)	(1)	(2)	(2)	(3)	(3)
VARIABLES	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.
Constant	0.572***		-4.026**		-5.747***	
	(0.103)		(1.601)		(1.889)	
(-)Log-Likelihood	284.4		264.3		258.2	
Pseudo R2	0.0007		0.0711		0.0927	
Prob. at mean		0.636		0.648		0.653
Observations	434	434	434	434	434	434

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6. 21: T-test for Joint Significance of Fatherdied Dummies, Urban Girls

age>=19, urban girl, comp2	(1)		(2)		(3)	
VARIABLES	12th Grade		12th Grade		12th Grade	
	Coeff.	Mar. Ef.	Coeff.	Mar. Ef.	Coeff.	Mar. Ef.
Joint Significance of Fatherdied	-0.321	-0.075	-0.172	-0.043	-0.053	-0.02
chi2(1)	0.39		0.09		0.01	
Prob > chi2	0.5334		0.7628		0.9264	

In the analysis for rural girl, we have a problem of lack of observation. In fact, there is only one orphan who completed the 12^{th} grade and one orphan who did not complete this grade. Hence, we ignore this case for the sake of accuracy of our study.

6.2. The Effect of Father's Death on Dropout

In this part, as a robustness check, we adopt an alternative estimation strategy, which is the duration analysis. To see father's death on dropout rates among the sample between ages of 6 and 24, we expanded our data in the framework of duration analysis. The details and explanations of the technique are given in the 'Data' section. In this section, we present the relationship between father's death and dropout probability using logit estimation. To see the exact effect of death of father, we repeat the analysis for two age groups. Again, we set the constraints and do our

analysis by sex and place of residence. Some of the noteworthy results are presented in this section, and the rest of them are presented in the Appendix. To categorize the ages in group, we generate clusters that represent the dropouts in the age group of 12, 13, 14 and 15, 16, 17, 18. Three significant results are presented in the following subsections.

6.2.1.1. The Effect of Father's Death on Dropout, (12-14), Boys

The first set of results is given in Tables 6.22 and 6.23. When we look at the fatherdied dummies, their sign is positive, which means that father's loss is positively correlated with dropout probability. To see the significance of fatherdied6_18 dummy, we do a joint t-test. The all models give significant results. For example, the probability of dropout increases by 2.6 percentage points in the second model. These results are consistent with the results in section 6.1, which is related to the completion rates. These results confirm our 8th grade estimation results.

Table 6.22 presents the estimation results. Having one more siblings increases the probability of dropout by 1 percentage points at 1 percent significance level. All parental education covariates are significant in all three models. For example, having higher educated mothers decreases the probability of dropout by 3.4 percentage points in the last specification. This probability is 4.3 percentage points for the dummy variable for father's higher education.

Table 6. 22: The Probability of Dropout, (12-14), Boys

Ages:12, 13, 14, boy	(1)	(1)	(2)	(2)	(3)	(3)
VARIABLES	Dropout	Mar. Ef.	Dropout	Mar. Ef.	Dropout	Mar. Ef.
Father's Death, 6≤Age at death≤14	0.331	0.037	0.204	0.012	0.111	0.006
	(0.429)	(0.053)	(0.413)	(0.028)	(0.384)	(0.021)
Father's Death, 0≤Age at death≤14	0.042	0.004	0.237	0.014	0.289	0.016
	(0.407)	(0.041)	(0.419)	(0.026)	(0.387)	(0.023)
Childhood Characteristics						
Age			1.595***	0.088***	1.618***	0.081***
			(0.499)	(0.013)	(0.516)	(0.016)

Table 6. 22 (Continued)

Ages:12, 13, 14, boy	(1)	(1)	(2)	(2)	(3)	(3)
VARIABLES	Dropout	Mar. Ef.	Dropout	Mar. Ef.	Dropout	Mar. Ef.
Number of Sibling			0.289***	0.016***	0.200***	0.010***
			(0.037)	(0.006)	(0.038)	(0.005)
Child's Birth Place						
(Reference Group: Village)						
Province			-0.240**	-0.013**	0.052	0.003
			(0.108)	(0.008)	(0.083)	(0.004)
District			-0.231**	-0.012**	-0.131	-0.006
			(0.093)	(0.007)	(0.099)	(0.006)
Mother's Characteristics						
Mother's Marriage Age					-0.009	-0.000
					(0.016)	(0.001)
Mother's Education						
(Reference Group: No Education)						
Primary School					-0.316***	-0.016***
					(0.109)	(0.007)
Secondary School					-0.765***	-0.029***
					(0.220)	(0.014)
Higher Education					-0.914***	-0.034***
					(0.303)	(0.014)
Father's Characteristics						
Father's Marriage Age					-0.021	-0.001
					(0.017)	(0.001)
Father's Education						
(Reference Group: No Education)						
Primary School					-0.313**	-0.016**
					(0.126)	(0.008)
Secondary School					-0.701***	-0.029***
					(0.201)	(0.010)
Higher Education					-1.107***	-0.043***
					(0.281)	(0.015)
Constant	-2.096***		-23.856***		-22.716***	
	(0.109)		(6.938)		(6.935)	
(-)Log-Likelihood	2520.0		2006.0		1949.0	
Pseudo R2	0.0002		0.2040		0.2270	
Prob. at Mean		0.110		0.058		0.053
Observations	7279	7279	7279	7279	7279	7279

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 6. 23: T-test for Joint Significance of Fatherdied Dummies, Boys

Ages:12, 13, 14, boy	(1)		(2)		(3)	
VARIABLES	Dropout		Dropout		Dropout	
	Coeff.	Mar. Ef.	Coeff.	Mar. Ef.	Coeff.	Mar. Ef.
Joint Significance of Fatherdied	0.373	0.041	0.441	0.026	0.400	0.022
chi2(1)	3.17		3.17		2.98	
Prob > chi2	0.0752		0.0882		0.0844	

6.2.1.2. The Effect of Father's Death on Dropout, (12-14), Urban Boys

Table 6.25 provides the results of urban boys for the ages of 11 and 14. The results are similar to that for the 8th grade completion ratios (Table 6.7). If children lose their parents when they are older than 6 years old, the probability of dropout rises by 3.4 percentage points at 10 percent significance level in the Model 2. Other specifications are all insignificant (p values<0.20).

All parental educational dummies are negatively correlated with dropout, which means that when the parent's education levels increases, the probability of dropout declines. For instance, having higher educated mothers will decrease the probability of dropout by 2.8 percentage points. Similarly, having higher educated fathers will decrease the probability of dropout by 3.9 percentage points.

Table 6. 24: The Probability of Dropout, (12-14), Urban Boys

Ages: 12,13,14, urban boy VARIABLES	(1) Dropout	(1) Mar. Ef.	(2) Dropout	(2) Mar. Ef.	(3) Dropout	(3) Mar. Ef.
Father's Death, 6≤Age at death≤14	0.579	0.063	0.534	0.032	0.340	0.017
	(0.610)	(0.078)	(0.599)	(0.046)	(0.589)	(0.034)
Father's Death, 0≤Age at death≤14	-0.156	-0.013	0.037	0.002	0.051	0.002
	(0.535)	(0.040)	(0.541)	(0.026)	(0.509)	(0.022)

Table 6.24 (Continued)

Ages: 12,13,14, urban boy VARIABLES	(1) Dropout	(1) Mar. Ef.	(2) Dropout	(2) Mar. Ef.	(3) Dropout	(3) Mar. Ef.
Childhood Characteristics						
Age			1.607***	0.076***	1.634***	0.069***
			(0.509)	(0.013)	(0.530)	(0.016)
Number of Sibling			0.314***	0.015***	0.189***	0.008***
			(0.038)	(0.006)	(0.044)	(0.005)
Child's Birth Place						
(Reference Group: Village)						
Province			0.062	0.003	0.295**	0.012**
			(0.142)	(0.007)	(0.125)	(0.005)
District			0.074	0.004	0.153	0.007
			(0.131)	(0.006)	(0.126)	(0.005)
Mother's Characteristics						
Mother's Marriage Age					-0.028	-0.001
					(0.017)	(0.001)
Mother's Education						
(Reference Group: No Education)						
Primary School					-0.322***	-0.014***
					(0.113)	(0.006)
Secondary School					-0.765***	-0.024***
					(0.234)	(0.012)
Higher Education					-0.857***	-0.028***
					(0.302)	(0.011)
Father's Characteristics						
Father's Marriage Age					-0.030	-0.001
					(0.020)	(0.001)
Father's Education						
(Reference Group: No Education)						
Primary School					-0.277	-0.012
					(0.243)	(0.011)
Secondary School					-0.499	-0.018
					(0.326)	(0.010)
Higher Education					-1.136***	-0.039***
					(0.422)	(0.016)
Constant	-2.242***		- 24.382***		- 22.644***	
	(0.121)		(7.075)		(7.134)	
(-)Log-Likelihood	1605.0		1293.0		1245.0	
Pseudo R2	0.00028		0.1950		0.2250	
Prob. at Mean		0.096		0.050		0.044
Observations	5065	5065	5065	5065	5065	5065

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 6. 25: T-test for Joint Significance of Fatherdied Dummies, Urban Boys

Ages: 12,13,14, urban boy	(1)		(2)		(3)	
VARIABLES	Dropout		Dropout		Dropout	
	Coeff.	Mar. Ef.	Coeff.	Mar. Ef.	Coeff.	Mar. Ef.
Joint Significance of Fatherdied	0.423	0.05	0.571	0.034	0.391	0.019
chi2(1)	1.45		2.96		1.63	
Prob > chi2	0.2285		0.0853		0.2015	

6.2.2. The Effect of Father's Death on Dropout, (15-18), Urban Boys

In all three specifications, only the fatherdied6_18 dummy is significant (all p values<0.10) In fact, the probability of dropout rises approximately by 15 percentage points if father loss was faced in children's school ages. This result is also consistent with the 12th grade completion rate discussed in the 6.1.2.4 (Table 6.17). All these three tables (Table 6.22, 6.24, 6.26) are consistent with what we have found in the logit results with our simple data (Table 6.5, 6.7, 6.17). We found the fact that orphan boys who live in urban areas have certain disadvantages in the 8th grade and the 12th grade completion after the death of their fathers and they cannot complete these grades. In other words, they dropout school. In this light, finding a significant relationship between orphan-hood and dropout makes our estimations and interpretations more reliable and convincing in this thesis.

In specification 3, we cannot see significant effects in mother's education dummies. The same thing is not true for the dummy variable for father's higher education. In fact, the probability decreases slightly to 6.2 percentage points. In addition, if father's marriage age increases by one year, the risk of dropout decreases by 0.5 percentage points at 5 percent significance level.

Table 6. 26: The Probability of Dropout, (15≤Age≤18), Urban Boys

Ages:15, 16, 17, 18, urban boy	(1)	(1)	(2)	(2)	(3)	(3)
VARIABLES	Dropout	Mar. Ef.	Dropout	Mar. Ef.	Dropout	Mar. Ef.
Father's Death, 6≤Age at death≤18	0.693*	0.144*	0.841*	0.170*	0.762	0.151
	-0.393	-0.093	-0.457	-0.107	-0.573	-0.131
Father's Death, 0≤Age at death≤18	-0.073	-0.013	-0.031	-0.005	-0.036	-0.006
	(0.327)	(0.056)	(0.352)	(0.057)	(0.411)	(0.066)
Childhood Characteristics						
Age			0.160	0.026	0.164	0.027
			(0.311)	(0.052)	(0.313)	(0.052)
Number of Sibling			0.061	0.010	0.039	0.006
			(0.038)	(0.007)	(0.042)	(0.007)
Child's Birth Place (Reference Group: Village)						
Province			0.074	0.012	0.149	0.024
			(0.134)	(0.023)	(0.116)	(0.020)
District			0.032	0.005	0.037	0.006
			(0.132)	(0.022)	(0.119)	(0.020)
Mother's Characteristics						
Mother's Marriage Age					0.032***	0.005***
					(0.012)	(0.002)
Mother's Education (Reference Group: No Education)						
Primary School					-0.012	-0.002
					(0.077)	(0.013)
Secondary School					-0.037	-0.006
					(0.136)	(0.021)
Higher Education					-0.278	-0.043
					(0.176)	(0.022)
Father's Characteristics						
Father's Marriage Age					-0.029**	-0.005**
					(0.012)	(0.002)
Father's Education (Reference Group: No Education)						
Primary School					-0.105	-0.017
					(0.158)	(0.026)
Secondary School					-0.007	-0.001
					(0.259)	(0.042)
Higher Education					-0.394***	-0.062***
					(0.128)	(0.020)

Table 6. 26 (Continued)

Ages:15, 16, 17, 18, urban boy	(1)	(1)	(2)	(2)	(3)	(3)
VARIABLES	Dropout	Mar. Ef.	Dropout	Mar. Ef.	Dropout	Mar. Ef.
Policy			-1.185*	-0.217*	-1.198*	-0.218*
			(0.617)	(0.120)	(0.622)	(0.120)
Constant	-1.208***		-3.283		-3.044	
	(0.124)		(5.274)		(5.382)	
(-)Log-Likelihood	1338.0		1222.0		1212.0	
Pseudo R2	0.0009		0.0878		0.0952	
Prob. at Mean		0.231		0.209		0.206
Observations	2476	2476	2476	2476	2476	2476

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6. 27: T-test for Joint Significance of Fatherdied Dummies, Urban Boys

Ages:15, 16, 17, 18, urban boy	(1)		(2)		(3)	
VARIABLES	Dropout		Dropout		Dropout	
	Coeff.	Mar. Ef.	Coeff.	Mar. Ef.	Coeff.	Mar. Ef.
Joint Significance of Fatherdied	-0.073	-0.013	-0.031	-0.005	0.726	0.145
chi2(1)	4.26		4.03		2.89	
Prob > chi2	0.0391		0.0447		0.0893	

6.3. The Effect of Father's Death on Leaving Home

As explained in the 'Data' section, we cannot see the children who are not at home at the time of the survey because of the features of the data. The children we observe in the data may have a higher likelihood to continue their educational life. Therefore, they may not be representative. This can create selection bias and may bias results for the 12^{th} grade completion probability. With an increase in age, the probability of observing children at home decreases, especially after age 18 which is the threshold level for the 12^{th} grade completion. They can enter into military force, marry or move to another place to work or get education. On the other hand, boys could undertake the responsibilities of fathers and stay at home. Girls whose fathers have passed

away may not marry since families are in financial difficulty as marriage has own its cost for the family such as dowery. Also, marriage highly depends on social interactions and networks of individuals and family. So, when children lose their fathers, they lose this network and girls are less likely leave home owing to marriage. In the light of these concerns, we continue our analysis by investigating this issue. In our logit model given in Table 6.28, we try to analyze whether the death of the father changes the probability of leaving home after age 14. To see this, the probability of leaving home is regressed on all covariates related to children and parents' characteristics. The results are given in Table 6.28.

Tables 6.28 and 6.29 present the results of total sample older than 14. In our all model, the coefficient of the dummy of father's death in 6-14 is insignificant (all p values>0.15). Even though father's death in 0-14 is significantly positive in the first model, which suggests that the probability of leaving home increases by 17 percentage points if children had faced father's death before age 6; this effect disappears in all other models. When we look at this case in the 'Data' part, there is also significant difference between orphans and non-orphans. However, including personal and paternal characteristics makes father's death insignificant in all other specifications. Since father's death does not increase or decrease the probability of leaving home, completion rate estimations are not affected by our consideration of children who are found at home at the time of survey. Therefore, we can claim that our completion rate estimation does not have the problem of selection bias, under or over estimation.

Sibling number has negative and significant effects in this model as well, showing that probability of leaving home is negatively correlated with sibling number. In Model 3, increasing mother's marriage age decreases the probability of leaving home by 0.5 percentage points. If the parental education levels increases, the probability of leaving home increases. In Model 3, having higher educated mothers raises the risk of leaving home by 7.9 percentage points. The same thing is true for father's higher education dummy. In fact, the probability decreases to 5.2 percentage points.

Table 6. 28: The Probability of Leaving Home, Age≥14, Total

total, age>=14	(1)	(1)	(2)	(2)	(3)	(3)
VARIABLES	Leaving Home	Mar. Ef.	Leaving Home	Mar. Ef.	Leaving Home	Mar. Ef.
Father's Death, 6≤Age at death≤14	-1.398***	-0.134***	-0.777	-0.062	-0.746	-0.057
	-0.473	-0.025	-0.506	-0.029	-0.494	-0.027
Father's Death, 0≤Age at death≤14	0.888***	0.169***	0.398	0.048	0.317	0.036
	-0.313	-0.071	-0.338	-0.047	-0.343	-0.043
Childhood Characteristics						
Age			0.364***	0.038***	0.349***	0.035***
			(0.013)	(0.002)	(0.013)	(0.002)
Number of Sibling			-0.362***	-0.038***	-0.499***	-0.050***
			(0.035)	(0.003)	(0.040)	(0.003)
Mother's Characteristics						
Mother's Marriage Age					-0.053***	-0.005***
					(0.014)	(0.001)
Mother's Education (Reference Group: No Education)						
Primary School					-0.628***	-0.065***
					(0.099)	(0.010)
Secondary School					-0.959***	-0.070***
					(0.191)	(0.010)
Higher Education					-1.104***	-0.079***
					(0.187)	(0.009)
Father's Characteristics						
Father's Marriage Age					0.012	0.001
					(0.011)	(0.001)
Father's Education (Reference Group: No Education)						
Primary School					-0.442***	-0.045***
					(0.151)	(0.016)
Secondary School					-0.661***	-0.055***
					(0.185)	(0.013)
Higher Education					-0.584***	-0.052***
					(0.171)	(0.013)
Constant	-1.483***		-7.885***		-5.710***	
	(0.034)		(0.274)		(0.456)	
(-)Log-Likelihood	2733.0		2153.0		2084.0	

Table 6. 28 (Continued)

total, age>=14	(1)	(1)	(2)	(2)	(3)	(3)
VARIABLES	Leaving Home	Mar. Ef.	Leaving Home	Mar. Ef.	Leaving Home	Mar. Ef.
Pseudo R2	0.0018		0.2140		0.2390	
Prob. at Mean		0.185		0.120		0.113
Observations	5708	5708	5708	5708	5708	5708

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6. 29: T-test for Joint Significance of Fatherdied Dummies, Leaving Home

total, age>=14	(1)		(2)		(3)	
VARIABLES	Leaving Home		Leaving Home		Leaving Home	
	Coeff.	Mar. Ef.	Coeff.	Mar. Ef.	Coeff.	Mar. Ef.
Joint Significance of Fatherdied	0.490	0.039	-0.379	0.048	-0.429	0.036
chi2(1)	2.04		0.99		1.42	
Prob > chi2	0.1533		0.3193		0.2332	

CHAPTER 7

RESULTS-Intergenerational Transmission of Education

In this section, the logit estimation results on the probability of completing the 5^{th}, 8^{th}, and 12^{th} grade for children with parents coming from different educational backgrounds are presented and interpreted respectively. Similarly, the logit estimation results on school completion rate of mothers coming from different parental educational backgrounds are presented and interpreted in sub sections of this part. Hence, we can see the magnitude of effects of parental education occurring for two successive cohorts of women.

7.1. Primary School and the 5^{th} Grade Completion Rates for Mothers and Children

In the first model, we included only parental educational variables to investigate whether girls who have educated parents have an advantage of completing the 5^{th} grade over girls with uneducated parents. The same analysis is done for mothers of these children so that we can get an idea about educational mobility in Turkey. We have four specifications of the same model given in Table 7.1: In the first specification, column 1, only parental education dummies are included in the model; in the second specification, in column 2, children's control variables such as birth place and characteristics of children are included in the model and in the third specification, other household characteristic variable like wealth index is included in the model. In the fourth specification, paternal control variables showing employment status and sectors are introduced. In the estimations conducted for mothers of children, there are two specifications because of information limitations about mothers: The first one consists of only mothers' parental education dummies and the second one also includes mothers' characteristics such as age, sibling

number, and birth place. For ease of interpretation, the logit coefficients have been transformed into marginal effects.

In this part, all children and mothers are considered in the estimations. In order to make results comparable and make discussion in a more convenient way, we focused on the first two specifications in children's estimation since mothers' estimation contains exactly the same covariates. In specification one, the effect of paternal education on the 5^{th} grade completion probability is examined by including three education dummies; primary, secondary, and higher education. Therefore, we can see whether or not the mother or father has a greater influence on children's education variable. Furthermore, we can observe whether or not this effect has changed over time by looking at two generations.

When we look at the logit estimation results given in Table 7.1, mothers' educational dummy generally are significant with a lower marginal effects compared to that of fathers. The only significant mothers' educational dummy is primary school and above dummy in order to be consistent with the mothers' estimation. (No education, which is the lowest education level among the education control variables, is taken as the base category.) Having a primary school graduate mother increases the probability of completing the 5^{th} grade by 1 percentage points at 5 percentage significance level compared to that of uneducated mothers. On the other hand, the probability of the 5^{th} grade completion is 2, 1 and 2 percentage points higher for primary, secondary, and high school and above graduate fathers compared to that of girls with uneducated fathers in the specification 2. The significance of fathers' educational dummies continues to exist in other models where we include wealth index and parents' employment status.

Table 7.2 suggests that both mothers' and fathers' educational dummies are significant at 1 percent. Having a primary school and above graduate mother increases the probability of completing the primary school by 20 percentage points compared to that of uneducated mothers. On the other hand, the probability of the

primary school completion is 15, 19 and 19 percentage points higher for primary, secondary, high school and above graduate fathers compared to that of girls with uneducated fathers in the specification 2.

The marginal effects of all levels of parents' educational dummies are higher for mothers than girls. Fathers' educational dummies for children are less than that of mothers. All of these results above suggest that the effect of parental education on girls' education in Turkey has decreased over time.

Having more siblings in household affects the 5^{th} grade completion rate of children negatively (Table 7.1 and Table 7.2, column 1, 2). The probability of completing the 5^{th} grade is 1 percentage points higher for girls coming into the world in province than probability of completing the 5^{th} grade for girls born in villages. Being born in province increases the probability of completing the 5^{th} grade by 15 percentage points whereas being born in district increases the probability of completing the 5^{th} grade by 8 percentage points relative to being born in a village in mothers' estimation (Table 7.2). Therefore, it can be inferred that the effects of both parental education variables and personal characteristics have been decreased over time on children's 5^{th} grade completion rate. In addition, children coming from poorer households have a lower likelihood of completing the 5^{th} grade. For instance, the probability of completing the 5^{th} grade for poorer girls is 2 percentage points higher than that of rich girls at 5 percent in the 3^{rd} and 4^{th} model. Moreover, the dummy which shows the 2012 twelve years compulsory education policy is positive and statistically significant at the 10 percent level in only the first model in Table 7.1. However, there is no effect of this policy in all other models. Hence, we can conclude that there is no effect of this policy on the 5^{th} grade completion rate of children older than 11 years of age since they are already being affected by 1997 eight years compulsory schooling law and the 5^{th} grade completion rates.

Table 7. 1: 5th Grade Completion, Girls, Age≥12

Total VARIABLES	(1) 5th Grade	(1) Mar. Ef.	(2) 5th Grade	(2) Mar. Ef.	(3) 5th Grade	(3) Mar. Ef.	(4) 5th Grade	(4) Mar. Ef.
Mothers' Education (Reference Group: Uneducated)								
Primary and Above	1.343***	0.032***	0.702***	0.011***	0.583**	0.007**	0.528**	0.006**
	(0.251)	(0.008)	(0.270)	(0.005)	(0.261)	(0.004)	(0.258)	(0.003)
Father's Education (Reference Group: Uneducated)								
Primary	1.468***	0.029***	1.092***	0.015***	1.011***	0.011***	1.076***	0.012***
	(0.250)	(0.007)	(0.263)	(0.005)	(0.259)	(0.005)	(0.261)	(0.004)
Secondary	1.595***	0.017***	1.059**	0.010**	0.864**	0.007**	0.896**	0.007**
	(0.406)	(0.004)	(0.432)	(0.003)	(0.435)	(0.003)	(0.446)	(0.003)
High School and Above	2.859***	0.030***	2.118***	0.018***	1.592**	0.012**	1.674**	0.012**
	(0.615)	(0.005)	(0.643)	(0.004)	(0.652)	(0.004)	(0.677)	(0.004)
Personal Characteristics								
Age			-0.187***	-0.002***	-0.196***	-0.002***	-0.199***	-0.002***
			(0.064)	(0.001)	(0.068)	(0.001)	(0.069)	(0.001)
Sibling Number			-0.296***	-0.004***	-0.276***	-0.003***	-0.251***	-0.002***
			(0.049)	(0.001)	(0.049)	(0.001)	(0.052)	(0.001)
Birth Place (Reference group: Village)								
Province			1.022***	0.012***	0.706*	0.007*	0.755*	0.007*
			(0.362)	(0.005)	(0.396)	(0.004)	(0.398)	(0.004)
District			0.355	0.004	0.278	0.003	0.376	0.003
			(0.270)	(0.003)	(0.287)	(0.003)	(0.290)	(0.003)

Table 7. 1 (Continued)

Total	(1)	(1)	(2)	(2)	(3)	(3)	(4)	(4)
VARIABLES	5th Grade	Mar. Ef.	5th Grade	Mar. Ef.	5th Grade	Mar. Ef.	5th Grade	Mar. Ef.
Wealth Index (Reference Group: Rich)								
Poorest					-1.233**	-0.018**	-1.226**	-0.017**
					(0.595)	(0.011)	(0.596)	(0.010)
Poorer					-1.381**	-0.022**	-1.351**	-0.020**
					(0.568)	(0.013)	(0.575)	(0.012)
Middle					0.224	0.002	0.171	0.002
					(0.795)	(0.007)	(0.801)	(0.007)
Mother's Employment Status								
Employed							0.628**	0.006**
							(0.295)	(0.003)
Father's Employment Status								
Employed							0.617**	0.008**
							(0.261)	(0.004)
2012 Education Law	0.616***	0.011***	-0.375	-0.005	-0.368	-0.004	-0.379	-0.004
	(0.222)	(0.004)	(0.378)	(0.005)	(0.383)	(0.004)	(0.387)	(0.004)
Constant	1.071***		6.101***		7.415***		6.650***	
	(0.218)		(1.312)		(1.531)		(1.551)	
Observations	2,834	2,834	2,834	2,834	2,834	2,834	2,834	2,834
Log lik	-347.5		-316.7		-309.9		-304.7	
Pseudo R-squared	0.165		0.239		0.255		0.267	

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 7. 2: Primary School Completion, Mothers

VARIABLES	(1) Primary	(1) Mar. Ef.	(2) Primary	(2) Mar. Ef.
Mother's Education (Reference Group: Uneducated)				
Primary and Above	1.872***	0.254***	1.445***	0.196***
	(0.146)	(0.012)	(0.143)	(0.013)
Father's Education (Reference Group: Uneducated)				
Primary	1.068***	0.191***	0.880***	0.149***
	(0.066)	(0.012)	(0.069)	(0.012)
Secondary	2.071***	0.218***	1.731***	0.185***
	(0.291)	(0.014)	(0.271)	(0.015)
High School and Above	2.242***	0.227***	1.731***	0.185***
	(0.314)	(0.013)	(0.325)	(0.017)
Personal Characteristics				
Age			-0.033***	-0.006***
			(0.007)	(0.001)
Sibling Number			-0.246***	-0.043***
			(0.015)	(0.003)
Birth Place (Reference group: Village)				
Province			1.069***	0.153***
			(0.111)	(0.012)
District			0.479***	0.077***
			(0.088)	(0.013)
Constant	0.122***		3.013***	
	(0.037)		(0.324)	
Observations	6,101	6,101	6,101	6,101
Log lik	-3256		-2990	
Pseudo R-squared	0.130		0.201	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

7.1.1. Primary School and the 5th Grade Completion Rates for Urban Mothers and Children

In this part, urban children and mothers who had lived in urban areas when they were 12 are considered in the estimations. When we look at the logit estimation results given in Table 7.3, mothers' educational dummy is only significant for the first two specifications. It loses its significance by adding wealth and parents' education

variables. Fathers' educational dummies are all meaningful and significant. For instance, the probability of completing the 5th grade is 1 and 2 percentage points higher for children with primary school, secondary school and above school graduate compared to that of children with uneducated fathers. Therefore, it can be said that fathers' education has more positive influence on girls' education outcomes.

In Table 7.4, having primary school and above graduate mothers increases the primary school by 11 percentage points for mothers compared to mothers with uneducated mothers. The probability of completing primary school is 5 and 10 percentage points higher for fathers with primary and secondary and above school graduate compared to mothers with uneducated fathers in the second specification.

Table 7.3 and 7.4 suggest that the impacts of parental education have decreased over time for urban areas. The marginal effects of all levels of parents' educational dummies are higher for mothers than girls. In urban areas, there are many facilities such as easiness of transportation which eases attending of school and eventually participating in school activities. Also, since compulsory schooling is eight years, it is difficult to escape from this law especially in urban areas where the school records are investigated regularly. Therefore, these may be explanations for the educational mobility being risen over the time.

Having more siblings in household affects the 5th grade completion rate of children negatively (Table 7.3 and Table 7.4, column 1, 2). The probability of completing the 5th grade is 1 percentage points higher for girls coming into the world in province and district than probability of completing the 5th grade for girls born in villages. In addition, children coming from poorer households have a lower likelihood of completing the 5th grade. For instance, the probability of completing the 5th grade for poorer girls is 3 percentage points less than that of rich girls in the 3rd and 4th model.

Table 7. 3: 5th Grade Completion, Urban Girls, Age≥12

Urban VARIABLES	(1) 5th Grade	(1) Mar. Ef.	(2) 5th Grade	(2) Mar. Ef.	(3) 5th Grade	(3) Mar. Ef.	(4) 5th Grade	(4) Mar. Ef.
Mother's Education (Reference Group: Uneducated)								
Primary and Above	1.251***	0.021***	0.715*	0.008*	0.488	0.004	0.457	0.004
	(0.349)	(0.007)	(0.383)	(0.005)	(0.367)	(0.004)	(0.362)	(0.003)
Father's Education (Reference Group: Uneducated)								
Primary	1.579***	0.019***	1.295***	0.013***	1.075***	0.008***	1.127***	0.008***
	(0.372)	(0.007)	(0.403)	(0.006)	(0.380)	(0.004)	(0.385)	(0.004)
Secondary and Above	2.540***	0.030***	2.039***	0.019***	1.403***	0.010***	1.452***	0.010***
	(0.516)	(0.007)	(0.561)	(0.006)	(0.541)	(0.005)	(0.554)	(0.004)
Personal Characteristics								
Age			-0.122	-0.001	-0.137	-0.001	-0.141	-0.001
			(0.098)	(0.001)	(0.102)	(0.001)	(0.102)	(0.001)
Sibling Number			-0.257***	-0.002***	-0.206**	-0.001**	-0.200**	-0.001**
			(0.085)	(0.001)	(0.084)	(0.001)	(0.083)	(0.001)
Birth Place (Reference group: Village)								
Province			1.142**	0.012**	0.900**	0.007**	0.948**	0.007**
			(0.447)	(0.006)	(0.458)	(0.005)	(0.458)	(0.005)
District			0.919**	0.007**	0.871**	0.005**	0.947**	0.006**
			(0.405)	(0.004)	(0.407)	(0.003)	(0.407)	(0.003)

Table 7. 3 (Continued)

Urban VARIABLES	(1) 5th Grade	(1) Mar. Ef.	(2) 5th Grade	(2) Mar. Ef.	(3) 5th Grade	(3) Mar. Ef.	(4) 5th Grade	(4) Mar. Ef.
Wealth Index (Reference Group: Rich)								
Poorest					-1.816***	-0.030***	-1.771***	-0.027***
					(0.637)	(0.017)	(0.639)	(0.016)
Poorer					-1.611**	-0.020**	-1.579**	-0.018**
					(0.630)	(0.011)	(0.639)	(0.010)
Middle					-0.297	-0.002	-0.318	-0.002
					(0.811)	(0.007)	(0.816)	(0.006)
Mother's Employment Status								
Employed							0.538	0.003
							(0.408)	(0.002)
Father's Employment Status								
Employed							0.505	0.004
							(0.403)	(0.004)
2012 Education								
Law	0.611*	0.007*	-0.172	-0.002	-0.186	-0.001	-0.201	-0.001
	(0.335)	(0.004)	(0.521)	(0.005)	(0.542)	(0.004)	(0.538)	(0.004)
Constant	1.294***		4.329**		6.056***		5.473**	
	(0.335)		(2.006)		(2.151)		(2.196)	
Observations	1,946	1,946	1,946	1,946	1,946	1,946	1,946	1,946
Log lik	-169.8		-158.1		-152.5		-151	
Pseudo R-squared	0.162		0.220		0.247		0.255	

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 7. 4: Primary School Completion, Urban Mothers

Urban	(1)	(1)	(2)	(2)
VARIABLES	Primary	Mar. Ef.	Primary	Mar. Ef.
Mother's Education (Reference Group: Uneducated)				
Primary and Above	2.423***	0.163***	1.930***	0.111***
	(0.294)	(0.014)	(0.291)	(0.012)
Fathers' Education (Reference Group: Uneducated)				
Primary	0.769***	0.068***	0.714***	0.052***
	(0.119)	(0.012)	(0.129)	(0.011)
Secondary School and Above	2.768***	0.124***	2.592***	0.098***
	(0.461)	(0.012)	(0.470)	(0.010)
Personal Characteristics				
Age			0.013	0.001
			(0.013)	(0.001)
Sibling Number			-0.317***	-0.023***
			(0.028)	(0.003)
Birth Place (Reference group: Village)				
Province			0.882***	0.061***
			(0.176)	(0.012)
District			0.167	0.012
			(0.157)	(0.011)
Constant	0.732***		1.923***	
	(0.073)		(0.618)	
Observations	2,537	2,537	2,537	2,537
Log lik	-978.6		-875.1	
Pseudo R-squared	0.155		0.244	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

7.1.2. Primary School and the 5th Grade Completion Rates for Rural Mothers and Children

The results given in Table 7.5 provide that mothers' educational dummy is significant in all the specifications. Its significance level decreases by adding wealth and parents' education variables. Fathers' educational dummies are all meaningful and significant. For instance, the probability of completing the 5th grade is 1 and 2

percentage points higher for children with primary school, secondary school and above school graduate fathers compared to that of children with uneducated fathers. Therefore, it can be said that fathers' education have more positive influence on girls' education outcomes.

In Table 7.6, having primary school and above graduate mothers increases the primary school by 23 percentage points for mothers compared to mothers with uneducated mothers. The probability of completing primary school is 22 and 20 percentage points higher for fathers with primary secondary and above school graduate compared to mothers with uneducated fathers in specification 2. In fact, these probabilities are higher than that of urban areas. This can be explained with the facilities such as varieties of transportation vehicles which ease attending of school and rules in urban areas since parents have to obey the compulsory schooling law. However, in rural areas, most of the decisions are dependent on parents' ideas. In addition, in urban areas, children are generally free and even if their parents are not well educated, they can choose to attend school. On the other hand, parents' incentives are crucial for education life of urban girls.

All the coefficients of paternal educational dummies are less in the second generation compared to the first generation. Like in urban areas, the rural areas show stronger pattern of educational mobility over time (Table 7.5 and 7.6). The marginal effects of all levels of parents' education dummies are higher for mothers than girls. For instance, the probability of completing the 5^{th} grade is 2 percentage points higher if children's mothers are educated. The probability increases to 23 percentages in mother's estimation.

Moreover, the probability of finishing the 5^{th} grade is negatively correlated with the number of sibling. Also, having employed fathers increases the probability of completing the 5^{th} grade by 3 percentage points. Additionally, the coefficient of the 2012 education law is statistically insignificant in the last four models.

Table 7. 5: 5th Grade Completion, Rural Girls, Age≥12

Rural	(1)	(1)	(2)	(2)	(3)	(3)	(4)	(4)
VARIABLES	5th Grade	Mar. Ef.	5th Grade	Mar. Ef.	5th Grade	Mar. Ef.	5th Grade	Mar. Ef.
Mothers' Education (Reference Group: Uneducated)								
Primary and Above	1.332***	0.059***	0.782**	0.025**	0.771**	0.025**	0.680*	0.019*
	(0.374)	(0.018)	(0.393)	(0.013)	(0.388)	(0.013)	(0.386)	(0.012)
Fathers' Education (Reference Group: Uneducated)								
Primary	1.365***	0.067***	1.041***	0.037***	1.035***	0.037***	1.089***	0.036***
	(0.341)	(0.023)	(0.357)	(0.017)	(0.356)	(0.017)	(0.370)	(0.016)
Secondary and Above	1.277**	0.035**	0.924*	0.021*	0.910	0.021	0.883	0.018
	(0.516)	(0.012)	(0.528)	(0.010)	(0.559)	(0.011)	(0.580)	(0.010)
Personal Characteristics								
Age			-0.246***	-0.007***	-0.243***	-0.007***	-0.253**	-0.007**
			(0.090)	(0.003)	(0.094)	(0.003)	(0.099)	(0.003)
Number of Sibling			-0.343***	-0.010***	-0.346***	-0.010***	-0.312***	-0.008***
			(0.061)	(0.002)	(0.067)	(0.003)	(0.074)	(0.003)
Birth Place (Reference group: Village)								
Province and District			-0.306	-0.010	-0.295	-0.009	-0.143	-0.004
			(0.443)	(0.016)	(0.455)	(0.016)	(0.478)	(0.014)

Table 7.5 (Continued)

Rural	(1)	(1)	(2)	(2)	(3)	(3)	(4)	(4)
VARIABLES	5th Grade	Mar. Ef.	5th Grade	Mar. Ef.	5th Grade	Mar. Ef.	5th Grade	Mar. Ef.
Wealth Index (Reference Group: Rich)								
Poorest					-0.274	-0.008	-0.309	-0.008
					(1.279)	(0.035)	(1.305)	(0.032)
Poorer and Middle					-0.375	-0.012	-0.420	-0.012
					(1.173)	(0.039)	(1.203)	(0.037)
Mother's Employment Status								
Employed							0.660	0.017
							(0.444)	(0.011)
Father's Employment Status								
Employed							0.795**	0.028**
							(0.369)	(0.017)
2012 Education Law	0.638**	0.026**	-0.597	-0.017	-0.584	-0.016	-0.615	-0.015
	(0.298)	(0.012)	(0.560)	(0.015)	(0.562)	(0.015)	(0.582)	(0.014)
Constant	0.860***		7.553***		7.799***		7.040***	
	(0.290)		(1.849)		(2.405)		(2.485)	
Observations	888	888	888	888	888	888	888	888
Log lik	-173.8		-156.6		-156.5		-152.4	
Pseudo R-squared	0.134		0.220		0.220		0.241	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 7. 6: Primary School Completion, Rural Mothers

VARIABLES	(1) Primary	(1) Mar. Ef.	(2) Primary	(2) Mar. Ef.
Mother's Education (Reference Group: Uneducated)				
Primary and Above	1.393***	0.265***	1.151***	0.225***
	(0.171)	(0.023)	(0.168)	(0.025)
Father's Education (Reference Group: Uneducated)				
Primary	1.118***	0.249***	0.968***	0.215***
	(0.081)	(0.017)	(0.082)	(0.017)
Secondary and Above	1.214***	0.227***	1.022***	0.197***
	(0.262)	(0.035)	(0.259)	(0.038)
Personal Characteristics				
Age			-0.056***	-0.013***
			(0.008)	(0.002)
Sibling Number			-0.219***	-0.051***
			(0.017)	(0.004)
Birth Place (Reference group: Village)				
Province			-0.392	-0.095
			(0.353)	(0.088)
District			0.757**	0.154**
			(0.351)	(0.060)
Constant	-0.122***		3.721***	
	(0.044)		(0.387)	
Observations	3,564	3,564	3,564	3,564
Log lik	-2186		-2075	
Pseudo R-squared	0.0873		0.134	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

7.2. Secondary School and the 8th Grade Completion Rates for Mothers and Children

The 8th grade completion rate is regressed on the same covariates for girls older than 14 who have finished the 5th grade. The results indicate that the mothers' educational dummies are significant in all the four specifications (Table 7.7). Having primary school graduate mothers increases the probability of completing the 8th grade by 4 percentage points whereas it is 5 percentage points for secondary school and above

graduate mothers compared to children with uneducated mothers. The probability of the 8th grade completion increases by 4, 2, and 5 percentage points if girls have primary school, secondary school, and high school and above graduate fathers.

In Table 7.8, having primary school graduate mothers increases the secondary school completion probability of mothers by 7 percentage points compared to mothers with uneducated mothers. Having secondary and above school graduate mothers increases the secondary school completion probability of mothers by 52 percentage points compared to mothers with uneducated mothers. The probability of completing secondary school is 8, 43, and 39 percentage points higher for fathers with primary, secondary, high and above school graduate compared to mothers with uneducated fathers in specification 2.

All the coefficients of paternal educational dummies are less for the second generation compared to the first generation. The marginal effects of all levels of parents 'educational dummies are higher for mothers than girls. For instance, the probability of completing the 8th grade is 5 percentage points higher if children's mothers have secondary and above school graduate education. The probability increases to 52 percentages in mothers' estimation (Table 7.8).

In all specifications, the number of siblings is negatively associated with completing the 8th grade for girls. This is also valid for mothers. The probability of completing secondary school for girls born in a province is 3 percentage points higher than that for mothers who born in a village in the second specification. The probability increases to 23 percentages for mothers who were born in province and 17 percentages for mothers who were born in villages. Also, the probability of completing the 8th grade for girls from households who are at the bottom 20% of the wealth distribution is 10 percentage lower than that of girls from households who are at the top 20% of the wealth distribution.

Table 7. 7: 8th Grade, Age≥15, Girls, finished the 5th grade

Total	(1)	(1)	(2)	(2)	(3)	(3)	(4)	(4)
VARIABLES	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.
Mothers' Education (Reference Group: Uneducated)								
Primary	1.485***	0.091***	0.903***	0.043***	0.762***	0.031***	0.738***	0.030***
	(0.197)	(0.015)	(0.218)	(0.012)	(0.216)	(0.010)	(0.217)	(0.010)
Secondary and Above	2.714***	0.080***	1.799***	0.051***	1.502**	0.040***	1.476**	0.039***
	(0.642)	(0.010)	(0.649)	(0.011)	(0.641)	(0.011)	(0.646)	(0.011)
Fathers' Education (Reference Group: Uneducated)								
Primary	1.224***	0.072***	0.835***	0.039***	0.714***	0.029***	0.744***	0.030***
	(0.226)	(0.017)	(0.243)	(0.013)	(0.244)	(0.011)	(0.244)	(0.011)
Secondary	1.113***	0.043***	0.597*	0.022*	0.225	0.008	0.233	0.008
	(0.316)	(0.010)	(0.335)	(0.010)	(0.355)	(0.012)	(0.354)	(0.012)
High School and Above	2.020***	0.076***	1.449***	0.048***	0.891**	0.029**	0.929**	0.029**
	(0.425)	(0.014)	(0.428)	(0.012)	(0.446)	(0.013)	(0.448)	(0.012)
Personal Characteristics								
Age			-0.148***	-0.007***	-0.202***	-0.008***	-0.201***	-0.008***
			(0.053)	(0.002)	(0.057)	(0.002)	(0.058)	(0.002)
Number of Sibling			-0.348***	-0.015***	-0.290***	-0.011***	-0.272***	-0.010***
			(0.047)	(0.003)	(0.046)	(0.002)	(0.047)	(0.002)
Birth Place (Reference group: Village)								
Province			0.781***	0.033***	0.184	0.007	0.228	0.009
			(0.240)	(0.010)	(0.253)	(0.009)	(0.255)	(0.009)
District			0.206	0.009	-0.191	-0.008	-0.130	-0.005
			(0.236)	(0.010)	(0.245)	(0.011)	(0.248)	(0.010)

Table 7. 7 (Continued)

Total	(1)	(1)	(2)	(2)	(3)	(3)	(4)	(4)
VARIABLES	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.
Wealth Index (Reference Group: Rich)								
Poorest					-1.666***	-0.105***	-1.669***	-0.104***
					(0.386)	(0.035)	(0.388)	(0.035)
Poorer					-0.715*	-0.034*	-0.699*	-0.032*
					(0.370)	(0.020)	(0.374)	(0.020)
Middle					0.227	0.008	0.202	0.007
					(0.463)	(0.016)	(0.463)	(0.016)
Mothers' Employment Status								
Employed							0.318	0.012
							(0.223)	(0.008)
Fathers' Employment Status								
Employed							0.273	0.012
							(0.242)	(0.011)
2012 Education Law	0.141	0.007	-0.371	-0.017	-0.458	-0.019	-0.467	-0.019
	(0.195)	(0.010)	(0.297)	(0.015)	(0.305)	(0.014)	(0.308)	(0.014)
Constant	0.211		4.623***		6.852***		6.416***	
	(0.192)		(1.109)		(1.283)		(1.285)	
Observations	1,751	1,751	1,751	1,751	1,751	1,751	1,751	1,751
Log lik	-457.1		-411.4		-392.8		-391	
Pseudo R-squared	0.177		0.260		0.293		0.296	

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 7. 8: Secondary School Completion, Mothers, graduated from primary school

VARIABLES	(1) Secondary	(1) Mar. Ef.	(2) Secondary	(2) Mar. Ef.
Mothers Education (Reference Group: Uneducated)				
Primary	1.185***	0.168***	0.705***	0.072***
	(0.086)	(0.015)	(0.098)	(0.012)
Secondary and Above	3.571***	0.708***	2.752***	0.520***
	(0.501)	(0.072)	(0.507)	(0.120)
Fathers' Education (Reference Group: Uneducated)				
Primary	1.144***	0.132***	0.958***	0.087***
	(0.100)	(0.011)	(0.104)	(0.010)
Secondary	2.765***	0.556***	2.402***	0.426***
	(0.175)	(0.037)	(0.196)	(0.047)
High School and Above	2.742***	0.550***	2.266***	0.392***
	(0.172)	(0.037)	(0.189)	(0.045)
Personal Characteristics				
Age			0.031***	0.003***
			(0.009)	(0.001)
Number of Siblings			-0.204***	-0.017***
			(0.021)	(0.002)
Birth Place (Reference group: Village)				
Province			1.701***	0.224***
			(0.101)	(0.018)
District			1.381***	0.168***
			(0.103)	(0.016)
Constant	-2.927***		-3.582***	
	(0.081)		(0.407)	
Observations	6,101	6,101	6,101	6,101
Log lik	-2185		-1926	
Pseudo R-squared	0.204		0.298	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

7.2.1. Secondary School and the 8th Grade Completion Rates for Urban Mothers and Children

When we look at the results for girls who have finished the 5th grade and live in urban areas, we notice that mothers' educational dummy is significant in all the four specifications (Table 7.9). Having primary school graduate mothers increases the probability of completing the 8th grade by 3 percentage points whereas it is 4 percentage points for secondary school and above graduate mothers compared to children with uneducated mothers. The probability of the 8th grade completion increases by 3, 3, and 4 percentage points if girls have primary school, secondary school, high school and above graduate fathers.

In Table 7.10, having primary school graduate mothers increases the secondary school completion probability of mothers by 14 percentage points compared to mothers with uneducated mothers. Having secondary and above school graduate mothers increases the secondary school completion probability of mothers by 53 percentage points compared to mothers with uneducated mothers. The probability of completing secondary school is 17, 49, and 45 percentage points higher for fathers with primary, secondary, high and above school graduate compared to mothers with uneducated fathers in specification 2.

All the coefficients of paternal educational dummies are less for the second generation compared to the first generation. The marginal effects of all levels of parents' educational dummies are higher for mothers than girls. For instance, the probability of completing the 8th grade is 4 percentage points higher if children's mothers have secondary and above school graduate education. The probability increases to 53 percentages in mothers' estimation (Table 7.10). The results are also very similar with the total estimation whose results given in the part 6.2.

In all specifications, the number of siblings is negatively associated with completing the 8th grade for urban girls. This is also valid for urban mothers. Although there is

no statistically significant effect of birth place for girls' estimation, the probability of completing secondary school for mothers born in a province is 12 percentage points higher than that of mothers who are born in a village in the second specification. The rate is 5 who are born in a district in the second specification. Also, the probability of completing the 8^{th} grade for girls from households who are at the bottom 20% of the wealth distribution is 9 percentage lower than that for girls from households who are at the top 20% of the wealth distribution.

Table 7. 9: 8th Grade, Age≥15, Urban Girls, finished the 5th grade

Urban	(1)	(1)	(2)	(2)	(3)	(3)	(4)	(4)
VARIABLES	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.
Mothers' Education (Reference Group: Uneducated)								
Primary	1.282***	0.052***	0.752**	0.025**	0.599*	0.018*	0.591*	0.018*
	(0.275)	(0.014)	(0.327)	(0.012)	(0.328)	(0.011)	(0.327)	(0.011)
Secondary and Above	2.742***	0.061***	2.053**	0.043**	1.777**	0.036**	1.755**	0.035**
	(0.818)	(0.011)	(0.815)	(0.011)	(0.807)	(0.010)	(0.808)	(0.011)
Fathers' Education (Reference Group: Uneducated)								
Primary	1.346***	0.051***	0.988***	0.032***	0.663*	0.019*	0.677*	0.020*
	(0.323)	(0.015)	(0.351)	(0.013)	(0.363)	(0.011)	(0.361)	(0.011)
Secondary	1.502***	0.035***	1.034**	0.024**	0.516	0.013	0.514	0.013
	(0.457)	(0.009)	(0.478)	(0.009)	(0.508)	(0.011)	(0.506)	(0.011)
High School and Above	1.749***	0.049***	1.406***	0.036***	0.827	0.021	0.863	0.021
	(0.502)	(0.015)	(0.501)	(0.013)	(0.531)	(0.013)	(0.537)	(0.013)
Personal Characteristics								
Age			-0.172**	-0.005**	-0.206***	-0.006***	-0.206***	-0.006***
			(0.070)	(0.002)	(0.077)	(0.002)	(0.077)	(0.002)
Number of Siblings			-0.304***	-0.009***	-0.232***	-0.007***	-0.227***	-0.007***
			(0.075)	(0.003)	(0.073)	(0.002)	(0.072)	(0.002)
Birth Place (Reference group: Village)								
Province			0.432	0.014	0.203	0.006	0.223	0.007
			(0.319)	(0.011)	(0.324)	(0.010)	(0.326)	(0.010)
District			0.038	0.001	-0.061	-0.002	-0.033	-0.001
			(0.338)	(0.010)	(0.343)	(0.010)	(0.342)	(0.010)

Table 7. 9 (Continued)

Urban	(1)	(1)	(2)	(2)	(3)	(3)	(4)	(4)
VARIABLES	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.
Wealth Index (Reference Group: Rich)								
Poorest					-1.663***	-0.098***	-1.656***	-0.097***
					(0.457)	(0.045)	(0.457)	(0.045)
Poorer					-0.609	-0.021	-0.589	-0.020
					(0.410)	(0.016)	(0.412)	(0.016)
Middle					0.085	0.002	0.087	0.002
					(0.456)	(0.013)	(0.455)	(0.013)
Mother's Employment Status								
Employed							0.138	0.004
							(0.304)	(0.008)
Father's Employment Status								
Employed							0.227	0.007
							(0.318)	(0.011)
2012 Education Law	0.195	0.007	-0.529	-0.018	-0.671	-0.022	-0.680	-0.022
	(0.290)	(0.010)	(0.424)	(0.017)	(0.450)	(0.017)	(0.451)	(0.017)
Constant	0.496*		5.200***		6.744***		6.465***	
	(0.277)		(1.550)		(1.722)		(1.691)	
Observations	1,222	1,222	1,222	1,222	1,222	1,222	1,222	1,222
Log lik	-242.9		-227.5		-217.8		-217.5	
Pseudo R-squared	0.155		0.208		0.242		0.243	

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 7. 10: Secondary School Completion, Urban Mothers, graduated from primary school

VARIABLES	(1) Secondary	(1) Mar. Ef.	(2) Secondary	(2) Mar. Ef.
Mother's Education (Reference Group: Uneducated)				
Primary	0.986***	0.223***	0.641***	0.140***
	(0.105)	(0.024)	(0.114)	(0.026)
Secondary and Above	2.929***	0.593***	2.400***	0.530***
	(0.482)	(0.050)	(0.481)	(0.073)
Father's Education (Reference Group: Uneducated)				
Primary	0.852***	0.180***	0.823***	0.170***
	(0.120)	(0.024)	(0.123)	(0.025)
Secondary	2.223***	0.502***	2.129***	0.487***
	(0.219)	(0.038)	(0.223)	(0.041)
High School and Above	2.011***	0.464***	1.953***	0.453***
	(0.193)	(0.037)	(0.197)	(0.040)
Personal Characteristics				
Age			0.035***	0.007***
			(0.010)	(0.002)
Number of Sibling			-0.205***	-0.043***
			(0.026)	(0.005)
Birth Place (Reference group: Village)				
Province			0.577***	0.122***
			(0.149)	(0.032)
District			0.252*	0.053*
			(0.150)	(0.032)
Constant	-1.879***		-2.473***	
	(0.095)		(0.487)	
Observations	2,537	2,537	2,537	2,537
Log lik	-1352		-1297	
Pseudo R-squared	0.160		0.194	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

7.2.2. Secondary School and the 8th Grade Completion Rates for Rural Mothers and Children

In the estimation for girls who have finished the 5th grade and live in rural areas, we notice that having primary school and above graduate mothers increases the

probability of completing the 8th grade by 11 percentage points compared to girls with uneducated mothers. The probability of the 8th grade completion increases by 7 and 10 percentage points if girls have primary school, high school and above graduate fathers (Table 7.11).

In Table 7.12, having primary school and above graduate mothers increases the secondary school completion probability of mothers by 3 percentage points compared to mothers with uneducated mothers. The probability of completing secondary school is 4, 35, and 31 percentage points higher for fathers with primary, secondary, high and above school graduate compared to mothers with uneducated fathers in specification 2.

Apart from the primary school dummy, all the marginal effects of paternal educational dummies are less for the second generation compared to the first generation. For instance, the probability of completing the 8th grade is 7 percentage points higher if children's mothers are primary school graduates. Having fathers with high school and above diploma increases the probability of completing the 8th grade by 10 percentage points. On the other hand, this probability increases to 31 percentages in the mothers' estimation. Overall, it can be said that educational mobility has increased in terms of fathers' education. However, in this category, mothers' education continues to be more effective on child's education outcomes in the second generation.

In all specifications for girls' and mothers' estimation, the number of siblings is negatively associated with completing the 8th grade for rural girls and their mothers. Although birth place does not have any significant effect for girls' estimation, being born in a province increases the probability of completing secondary school by 6 percentage points and being born in a district increases the probability of completing secondary school by 7 percentage points for mothers.

Table 7. 11:8th Grade, Age≥15, Rural Girls, finished the 5th grade[4]

Rural	(1)	(1)	(2)	(2)	(3)	(3)
VARIABLES	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.
Mothers' Education (Reference Group: Uneducated)						
Primary and Above	1.596***	0.195***	1.116***	0.112***	1.054***	0.103***
	(0.295)	(0.041)	(0.305)	(0.035)	(0.306)	(0.035)
Fathers' Education (Reference Group: Uneducated)						
Primary	1.106***	0.136***	0.727**	0.073**	0.779**	0.077**
	(0.325)	(0.048)	(0.342)	(0.038)	(0.344)	(0.038)
Secondary	0.460	0.043	0.166	0.014	0.207	0.017
	(0.477)	(0.039)	(0.497)	(0.041)	(0.511)	(0.040)
High School and						
Aove	2.756***	0.144***	1.901*	0.100*	1.900*	0.098*
	(1.056)	(0.024)	(1.097)	(0.028)	(1.073)	(0.027)
Personal Characteristics						
Age			-0.136	-0.012	-0.135	-0.012
			(0.084)	(0.008)	(0.087)	(0.008)
Number of Sibling			-0.385***	-0.035***	-0.348***	-0.031***
			(0.063)	(0.007)	(0.068)	(0.007)
Birth Place (Reference group: Village)						
Province			1.124	0.071	1.225	0.073
			(0.862)	(0.036)	(0.884)	(0.034)
District			-0.219	-0.021	-0.135	-0.013
			(0.428)	(0.044)	(0.442)	(0.043)
Mother's Employment Status						
Employed					0.491	0.043
					(0.334)	(0.029)
Father's Employment Status						
Employed					0.274	0.027
					(0.406)	(0.043)
2012 Education Law	0.151	0.016	-0.207	-0.019	-0.219	-0.020
	(0.269)	(0.028)	(0.433)	(0.041)	(0.444)	(0.042)
Constant	-0.069		4.460***		3.877**	
	(0.274)		(1.725)		(1.763)	
Observations	529	529	529	529	529	529
Log lik	-203.5		-179.5		-177.7	
Pseudo R-squared	0.167		0.266		0.273	

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, *p<0.1

[4] In this specific category, the wealth variable predicts success perfectly, the dummy which represent girls who are not rich is dropped and 47 observations are not used in the estimation. That is, 47 rich girls had completed the 8th grade. Since we do not want to loose observations, we ignore this specification just for this case.

Table 7. 12: Secondary School Completion, Rural Mothers, graduated from primary school

VARIABLES	(1) Secondary	(1) Mar. Ef.	(2) Secondary	(2) Mar. Ef.
Mother's Education (Reference Group: Uneducated)				
Primary and Above	0.999***	0.045***	0.777***	0.029***
	(0.178)	(0.011)	(0.190)	(0.010)
Father's Education (Reference Group: Uneducated)				
Primary	1.372***	0.052***	1.234***	0.041***
	(0.208)	(0.008)	(0.206)	(0.007)
Secondary	3.148***	0.392***	3.048***	0.345***
	(0.338)	(0.074)	(0.337)	(0.070)
High School and Aove	3.017***	0.365***	2.877***	0.311***
	(0.385)	(0.086)	(0.413)	(0.087)
Personal Characteristics				
Age			0.004	0.000
			(0.017)	(0.000)
Number of Siblings			-0.187***	-0.005***
			(0.038)	(0.001)
Birth Place (Reference group: Village)				
Province			1.163**	0.057**
			(0.498)	(0.039)
District			1.340***	0.071***
			(0.464)	(0.042)
Constant	-4.141***		-3.134***	
	(0.174)		(0.779)	
Observations	3,564	3,564	3,564	3,564
Log lik	-604.9		-586.3	
Pseudo R-squared	0.133		0.160	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

7.3. High School and the 12th Grade Completion Rates for Mothers and Children

The 12th grade completion is regressed on the same covariates as in the model for the 8th grade completion for girls who are older than 18 and have finished the 8th grade. Mothers' primary school educational dummy is significant in first two specifications

(Table 7.13). Having secondary school graduate mothers increases the probability of completing the 12th grade by 25 percentage points compared to children with uneducated mothers. The probability of the 12th grade completion increases by 19 percentage points if girls have high school and above graduate fathers. Therefore, it can be said that mothers are seen as a drive factor for girls older than 19 in finishing the 12th grade since mothers are role models for their daughters and they are also caretakers in the family. All of these motivate girls to complete the 12th grade.

In Table 7.14, having primary school graduate mothers increases the secondary school completion probability of mothers by 2 percentage points compared to mothers with uneducated mothers. Having secondary and above school graduate mothers increases the high school completion probability of mothers by 9 percentage points compared to mothers with uneducated mothers. The probability is 5 percentages for the secondary school dummy. The probability of completing high school is 5, 30, and 28 percentage points higher for fathers with primary, secondary, high and above school graduate compared to mothers with uneducated fathers in specification 2.

All the coefficients of maternal educational dummies are more for the second generation compared to the first generation. The marginal effects of all levels of mothers' educational dummies are less for mothers than for girls. For instance, the probability of completing the 12th grade is 25 percentage points higher if children's mothers have secondary and above school graduate education. The probability decreases to 9 percentage in mothers' estimation (Table 7.14). On the other hand, only primary school variable of fathers has a similar effect. However, fathers' secondary school dummy is insignificant. The probability of completing the 12th grade is 19 percentage points higher for girls with high and above school graduate fathers whereas it is 28 percentage in mothers' estimation (Table 7.14). Overall, in this level of education, while mothers' education starts to be a meaningful and significant determinant for child's school outcomes, this effect is smaller for mothers. Also, the effects of fathers' education still show the similar pattern with

other estimation results. In other words, there is a diminishing effect of paternal backgrounds for high school completion probabilities. However, mothers' effects have been increased.

In all specifications, the number of siblings is negatively associated with completing the 12^{th} grade for girls. The probability of completing secondary school for girls born in a province is 11 percentage points higher than that of mothers who give birth in a village in the second specification. The rate is 21 percentages for children born in a district in the second specification (Table 7.13). The probability of completing secondary school for mothers born in a province is 11 percentage points higher than that for mothers who are born in a village in the second specification. The rate is 10 percentages for mothers born in a district in the second specification (Table 7.14). Also, the probability of completing the 12^{th} grade for girls from households who are at the bottom 20% of the wealth distribution is 21 percentage lower than that of girls from households who are at the top 20% of the wealth distribution. Furthermore, if mothers have a job, the probability of completing the 12^{th} grade rises by 14 percentage points in their specification which suggests that girls with employed mothers have greater probability of completing the 12^{th} grade compared to their counterparts with unemployed mothers. Since our groups are older than 19, the 2012 education law does not affect this sample and policy dummy has not been used.

Table 7. 13: 12^{th} Grade, Age≥19, Girls, finished the 8^{th} grade

Total	(1)	(1)	(2)	(2)	(3)	(3)	(4)	(4)
VARIABLES	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.
Mothers' Education (Reference Group: Uneducated)								
Primary	0.912***	0.224***	0.454**	0.113**	0.330	0.082	0.310	0.077
	(0.199)	(0.047)	(0.222)	(0.055)	(0.231)	(0.057)	(0.235)	(0.058)
Secondary	1.541***	0.319***	0.916**	0.212**	0.756*	0.179*	0.809*	0.191*
	(0.386)	(0.058)	(0.409)	(0.083)	(0.416)	(0.090)	(0.425)	(0.090)
High School and Above	1.715***	0.351***	1.088***	0.248***	0.977**	0.227**	0.964**	0.224**
	(0.366)	(0.053)	(0.381)	(0.074)	(0.392)	(0.080)	(0.398)	(0.082)
Fathers' Education (Reference Group: Uneducated)								
Primary	0.676**	0.167**	0.546	0.135	0.455	0.113	0.469	0.116
	(0.308)	(0.075)	(0.334)	(0.082)	(0.331)	(0.082)	(0.332)	(0.082)
Secondary	0.837**	0.197**	0.598	0.145	0.425	0.104	0.450	0.110
	(0.366)	(0.078)	(0.388)	(0.089)	(0.384)	(0.092)	(0.383)	(0.091)
High School and Above	1.127***	0.264***	0.806**	0.194**	0.612	0.150	0.636*	0.155*
	(0.349)	(0.074)	(0.374)	(0.085)	(0.378)	(0.089)	(0.376)	(0.089)
Personal Characteristics								
Age			0.167***	0.042***	0.140**	0.035**	0.144**	0.036**
			(0.056)	(0.014)	(0.056)	(0.014)	(0.057)	(0.014)
Number of Siblings			-0.319***	-0.080***	-0.301***	-0.075***	-0.282***	-0.070***
			(0.056)	(0.014)	(0.058)	(0.015)	(0.060)	(0.015)

Table 7. 13 (Continued)

Total	(1)	(1)	(2)	(2)	(3)	(3)	(4)	(4)
VARIABLES	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.
Birth Place (Reference group: Village)								
Province			0.435**	0.108**	0.228	0.057	0.330	0.082
			(0.210)	(0.052)	(0.231)	(0.057)	(0.234)	(0.058)
District			0.898***	0.214***	0.756***	0.183***	0.845***	0.203***
			(0.244)	(0.054)	(0.250)	(0.058)	(0.255)	(0.058)
Wealth Index (Reference Group: Rich)								
Poorest					-0.877***	-0.214***	-0.878**	-0.214**
					(0.338)	(0.078)	(0.341)	(0.079)
Poorer					-0.211	-0.053	-0.202	-0.051
					(0.265)	(0.066)	(0.267)	(0.067)
Middle					0.218	0.054	0.210	0.052
					(0.252)	(0.062)	(0.253)	(0.062)
Mothers' Employment Status								
Employed							0.547***	0.135***
							(0.190)	(0.046)
Fathers' Employment Status								
Employed							-0.035	-0.009
							(0.272)	(0.068)
Constant	-1.394***		-4.049***		-3.048**		-3.410**	
	(0.298)		(1.266)		(1.321)		(1.366)	
Observations	660	660	660	660	660	660	660	660
Log lik	-417.8		-388.6		-382.4		-378.1	
Pseudo R-squared	0.0838		0.148		0.162		0.171	

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 7. 14:High School Completion, Mothers, graduated from secondary school

VARIABLES	(1) High School	(1) Mar. Ef.	(2) High School	(2) Mar. Ef.
Mothers' Education (Reference Group: Uneducated)				
Primary	1.081***	0.091***	0.522***	0.026***
	(0.101)	(0.011)	(0.115)	(0.007)
Secondary	1.853***	0.242***	1.238***	0.093***
	(0.406)	(0.086)	(0.447)	(0.053)
High School and Above	4.185***	0.754***	3.361***	0.523***
	(0.658)	(0.098)	(0.654)	(0.161)
Fathers' Education (Reference Group: Uneducated)				
Primary	1.290***	0.088***	1.129***	0.053***
	(0.134)	(0.009)	(0.139)	(0.007)
Secondary	2.823***	0.457***	2.455***	0.291***
	(0.193)	(0.043)	(0.213)	(0.044)
High School and Above	2.934***	0.482***	2.430***	0.284***
	(0.192)	(0.042)	(0.206)	(0.042)
Personal Characteristics				
Age			0.062***	0.003***
			(0.011)	(0.000)
Number of Sibling			-0.241***	-0.010***
			(0.028)	(0.001)
Birth Place (Reference group: Village)				
Province			1.598***	0.113***
			(0.128)	(0.014)
District			1.488***	0.101***
			(0.124)	(0.012)
Constant	-3.666***		-5.494***	
	(0.114)		(0.491)	
Observations	6,101	6,101	6,101	6,101
Log lik	-1609		-1422	
Pseudo R-squared	0.212		0.304	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

7.3.1. High School and the 12th Grade Completion Rates for Urban Mothers and Children

In Table 7.15, while mothers' primary school dummy is insignificant, having mothers with secondary school and high school and above diploma increases the probability of completing the 12th grade by 23 and 21 percentage points, respectively. In fathers' educational dummies, only statistically significant dummy is high school and above. Having high school and above graduate fathers rises the probability of completing the 12th grade by 18 percentage points compared to having uneducated fathers. Like in the estimation for all children older than 19, these results may be explained in the framework of mothers-girls. As explained in the theoretical literature part, educated mothers do not have only an incentive to educate their daughters, the advantage of having educated mothers can be also seen as a high priority and motivation towards their daughters. Moreover, in Turkish society, daughters are expected to be the main caretaker for their elderly parents. This also gives mothers an incentive to educate their daughters and their linkage has been gained strength.

In Table 7.16, having primary school graduate mothers increases the high school and above completion probability of mothers by 8 percentage points compared to mothers with uneducated mothers. Having secondary school, high school and above graduate mothers increases the high school completion probability of mothers by 17 and 63 percentage points compared to mothers with uneducated mothers. The probability of completing high school is 12, 44, and 44 percentage points higher for fathers with primary, secondary, and high and above school graduate compared to mothers with uneducated fathers in specification 2.

Overall, there is a diminishing effect of paternal backgrounds for high school completion probabilities. Except for secondary school dummy of mothers' education, the same judgment can be concluded.

The probability of completing secondary school for girls born in a district is 17 percentage points higher than that for mothers who give birth in a village in the second specification (Table 7.15). The probability of completing high school for mothers born in a province is 6 percentage points higher than that for mothers who were born in a village in the second specification. The rate is 4 percentages for mothers born in a district in the second specification (Table 7.16). Also, the probability of completing the 12^{th} grade for girls with employed mothers is 15 percentages higher than that for girls with unemployed mothers.

Table 7. 15: 12th Grade, Age≥19, Urban Girls, finished the 8th grade

Urban	(1)	(1)	(2)	(2)	(3)	(3)	(4)	(4)
VARIABLES	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.
Mothers' Education (Reference Group: Uneducated)								
Primary	0.675***	0.163***	0.255	0.061	0.185	0.045	0.156	0.038
	(0.247)	(0.059)	(0.277)	(0.067)	(0.282)	(0.068)	(0.287)	(0.069)
Secondary	1.614***	0.303***	1.142**	0.234**	1.041**	0.218**	1.130**	0.232**
	(0.457)	(0.058)	(0.480)	(0.078)	(0.488)	(0.083)	(0.491)	(0.080)
High School and Above	1.459***	0.291***	0.962**	0.207**	0.891**	0.194**	0.879**	0.191**
	(0.406)	(0.061)	(0.426)	(0.079)	(0.438)	(0.083)	(0.444)	(0.084)
Fathers' Education (Reference Group: Uneducated)								
Primary	0.683*	0.162*	0.595	0.142	0.506	0.121	0.535	0.128
	(0.380)	(0.089)	(0.423)	(0.099)	(0.427)	(0.101)	(0.434)	(0.102)
Secondary	0.930**	0.202**	0.760	0.169	0.625	0.142	0.638	0.144
	(0.436)	(0.083)	(0.481)	(0.097)	(0.486)	(0.102)	(0.490)	(0.102)
High School and Above	0.988**	0.224**	0.767*	0.176*	0.611	0.142	0.629	0.146
	(0.417)	(0.087)	(0.454)	(0.099)	(0.465)	(0.104)	(0.473)	(0.105)
Personal Characteristics								
Age			0.156**	0.037**	0.145**	0.035**	0.146**	0.035**
			(0.066)	(0.016)	(0.066)	(0.016)	(0.067)	(0.016)
Number of Siblings			-0.333***	-0.080***	-0.318***	-0.077***	-0.314***	-0.075***
			(0.072)	(0.017)	(0.074)	(0.018)	(0.075)	(0.018)

Table 7.15 (Continued)

Urban	(1)	(1)	(2)	(2)	(3)	(3)	(4)	(4)
VARIABLES	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.
Birth Place (Reference group: Village)								
Province			0.213	0.051	0.172	0.042	0.184	0.044
			(0.307)	(0.074)	(0.312)	(0.075)	(0.309)	(0.075)
District			0.772**	0.177**	0.772**	0.177**	0.784**	0.179**
			(0.338)	(0.073)	(0.339)	(0.073)	(0.340)	(0.073)
Wealth Index (Reference Group: Rich)								
Poorest					-0.527	-0.130	-0.520	-0.128
					(0.439)	(0.109)	(0.448)	(0.111)
Poorer					-0.217	-0.053	-0.168	-0.041
					(0.312)	(0.076)	(0.315)	(0.077)
Middle					0.030	0.007	0.047	0.011
					(0.277)	(0.066)	(0.279)	(0.067)
Mothers' Employment Status								
Employed							0.637***	0.148***
							(0.228)	(0.051)
Fathers' Employment Status								
Employed							-0.155	-0.037
							(0.309)	(0.072)
Constant	-1.078***		-3.486**		-3.024*		-3.140*	
	(0.369)		(1.511)		(1.558)		(1.630)	
Observations	471	471	471	471	471	471	471	471
Log lik	-298.4		-280.6		-279.6		-275.6	
Pseudo R-squared	0.0648		0.121		0.124		0.136	

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 7. 16: High School Completion, Urban Mothers, graduated from secondary school

VARIABLES	(1) High School	(1) Mar. Ef.	(2) High School	(2) Mar. Ef.
Mothers' Education (Reference Group: Uneducated)				
Primary	0.900***	0.152***	0.556***	0.085***
	(0.114)	(0.021)	(0.126)	(0.021)
Secondary	1.372***	0.285***	0.960**	0.177**
	(0.393)	(0.097)	(0.431)	(0.097)
High School and Above	3.474***	0.697***	2.974***	0.629***
	(0.621)	(0.069)	(0.653)	(0.107)
Fathers' Education (Reference Group: Uneducated)				
Primary	0.859***	0.129***	0.876***	0.124***
	(0.149)	(0.021)	(0.151)	(0.020)
Secondary	2.119***	0.458***	2.088***	0.440***
	(0.221)	(0.050)	(0.229)	(0.053)
High School and Above	2.167***	0.465***	2.110***	0.441***
	(0.204)	(0.045)	(0.207)	(0.047)
Personal Characteristics				
Age			0.065***	0.009***
			(0.012)	(0.002)
Number of Siblings			-0.212***	-0.030***
			(0.031)	(0.004)
Birth Place (Reference group: Village)				
Province			0.398**	0.057**
			(0.175)	(0.026)
District			0.298*	0.043*
			(0.172)	(0.025)
Constant	-2.536***		-4.316***	
	(0.125)		(0.549)	
Observations	2,537	2,537	2,537	2,537
Log lik	-1122		-1075	
Pseudo R-squared	0.161		0.196	

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

7.3.2. High School and the 12th Grade Completion Rates for Rural Mothers and Children

In Table 7.17, having educated mothers increases the probability of completing the 12th grade by 17 percentage points for rural girls. However, the results are not robust since when we add other variables, the significance disappears. Fathers' educational dummies are not significant in all specifications.

In Table 7.18, having primary school and above graduate mothers increases the high school completion probability of mothers by 1 percentage points compared to mothers with uneducated mothers. This significance disappears when we add other covariates. Having primary, secondary and high school and above graduate fathers increases the high school completion probability of mothers by 2, 23 and 18 percentage points compared to mothers with uneducated fathers.

Overall, there is a diminishing effect of paternal backgrounds for high school completion probabilities. The situation is reverse for mothers' education in the estimations but the results do not show strong evidence. Still, in the mothers-girls framework, girls should be motivated by mothers to be able to finish the 12th grade and this fact is much more valid for the current generation rather than the past generation.

Table 7. 17:12th Grade, Age≥19, Rural, Girls, finished the 8th grade

VARIABLES	(1) 12th Grade	(1) Mar. Ef.	(2) 12th Grade	(2) Mar. Ef.	(3) 12th Grade	(3) Mar. Ef.	(4) 12th Grade	(4) Mar. Ef.
Mothers' Education (Reference Group: Uneducated)								
Primary and Above	1.213***	0.271***	0.779**	0.172**	0.650	0.143	0.632	0.138
	(0.360)	(0.073)	(0.389)	(0.082)	(0.414)	(0.088)	(0.417)	(0.088)
Fathers' Education (Reference Group: Uneducated)								
Primary	0.703	0.161	0.460	0.103	0.520	0.114	0.483	0.106
	(0.560)	(0.123)	(0.582)	(0.128)	(0.575)	(0.124)	(0.567)	(0.122)
Secondary	0.363	0.088	0.115	0.027	0.069	0.016	0.052	0.012
	(0.746)	(0.184)	(0.717)	(0.168)	(0.728)	(0.167)	(0.719)	(0.163)
High School and Above	1.465**	0.351**	0.924	0.223	0.785	0.188	0.803	0.192
	(0.689)	(0.150)	(0.766)	(0.187)	(0.766)	(0.188)	(0.743)	(0.182)
Personal Characteristics								
Age			0.182	0.042	0.106	0.024	0.112	0.025
			(0.114)	(0.026)	(0.112)	(0.025)	(0.110)	(0.025)
Number of Sibling			-0.320***	-0.073***	-0.285***	-0.064***	-0.263**	-0.059**
			(0.087)	(0.020)	(0.100)	(0.023)	(0.104)	(0.023)
Birth Place (Reference group: Village)								
Province			0.628	0.151	0.403	0.095	0.477	0.112
			(0.571)	(0.141)	(0.667)	(0.162)	(0.676)	(0.165)
District			0.647	0.155	0.536	0.127	0.617	0.146
			(0.538)	(0.133)	(0.537)	(0.131)	(0.548)	(0.134)

Table 7. 17 (Continued)

VARIABLES	(1) 12th Grade	(1) Mar. Ef.	(2) 12th Grade	(2) Mar. Ef.	(3) 12th Grade	(3) Mar. Ef.	(4) 12th Grade	(4) Mar. Ef.
Wealth Index (Reference Group: Rich)								
Poorest					-0.818	-0.179	-0.777	-0.170
					(0.665)	(0.139)	(0.670)	(0.141)
Poorer					0.068	0.015	0.052	0.012
					(0.611)	(0.139)	(0.612)	(0.138)
Middle					1.219*	0.292*	1.147	0.275
					(0.705)	(0.167)	(0.703)	(0.168)
Mothers' Employment Status								
Employed							0.361	0.081
							(0.380)	(0.085)
Fathers' Employment Status								
Employed							0.113	0.025
							(0.632)	(0.138)
Constant	-1.886***		-4.562*		-2.872		-3.318	
	(0.545)		(2.605)		(2.632)		(2.633)	
Observations	189	189	189	189	189	189	189	189
Log lik	-113.9		-104.9		-97.69		-97.18	
Pseudo R-squared	0.103		0.174		0.231		0.235	

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 7. 18: High School Completion, Rural Mothers, graduated from secondary school

VARIABLES	(1) High School	(1) Mar. Ef.	(2) High School	(2) Mar. Ef.
Mothers' Education (Reference Group: Uneducated)				
Primary and Above	0.674***	0.009***	0.266	0.002
	(0.252)	(0.005)	(0.269)	(0.003)
Fathers' Education (Reference Group: Uneducated)				
Primary	2.188***	0.034***	2.010***	0.023***
	(0.387)	(0.006)	(0.395)	(0.005)
Secondary	3.930***	0.325***	3.716***	0.229***
	(0.487)	(0.083)	(0.496)	(0.068)
High School and Above	3.556***	0.253***	3.420***	0.184***
	(0.607)	(0.102)	(0.643)	(0.085)
Personal Characteristics				
Age			0.024	0.000
			(0.025)	(0.000)
Number of Siblings			-0.316***	-0.002***
			(0.060)	(0.001)
Birth Place (Reference group: Village)				
Province			1.388***	0.023***
			(0.529)	(0.015)
District			0.634	0.007
			(0.724)	(0.010)
Constant	-5.582***		-4.648***	
	(0.355)		(1.192)	
Observations	3,564	3,564	3,564	3,564
Log lik	-323.4		-306.1	
Pseudo R-squared	0.147		0.193	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

All in all, we can observe that the inequality in education has decreased over time by looking at two successive generations; first one is girls-parents, and second one is mothers-grandparents in Turkey. In the first generation, the effect of grandfathers' education on primary, secondary, and high school completion rate of mothers is more than that of grandfathers' and the coefficients are statistically significant. In the

second generation, the parental education variables have a little explanatory power to explain the 5^{th}, 8^{th}, and 12^{th} grade completion rates in general. Specifically, if the school level rises, the effect of mothers' education on girls' education outcomes increases in the second generation, meaning that mothers are seen as a role models for girls. In the first generation, the effect of fathers' educational variables on school completion rate has been always higher than that of mothers. This can be related to the fact that mothers have generally passive roles in the family in earlier times and the relationship between mothers and girls are put into a traditional shape. Throughout time, the role of mothers as guardians and motivators has increased in the family life. Therefore, for a high school level, the effects of mothers' education have increased over time whereas the effects of fathers' have decreased.

CHAPTER 8

CONCLUSION

In the first part of this thesis, the effects of father's death on children's educational life and their decisions to continue their education are examined. To analyze the school completion rates at each grade, 5^{th}, 8^{th}, and 12^{th} grade completion rates are regressed on father's death dummy and children's personal, paternal characteristics using logit estimation. By extending our dataset in duration analysis, logit model used for dropout rate is regressed on the same main and other explanatory variables as in the logit model. Lastly, leaving home probability is regressed on father's death dummy and other explanatory variables as in the other models. The dataset is a Demographic and Health Survey (DHS, 2013 round) conducted by the Hacettepe University Institute of Population Studies.

The logit estimation results of paternal loss on children's educational attainment have many conclusions. Initially, we notice that when children's age at death increases, effects of this incident on orphans' school attainment decrease in 'Data' part. In this way, we use three different orphan-hood definitions at each school grade, all of which focus on orphan-hood in school ages. This is reasonable since with time, other members of families can enhance the solutions to their financial and psychological problems. Primary school completion rates are high for our sample which consists of 6-24 age range since all the observations are affected by the 1997 Turkish Compulsory schooling law. For boys who live in urban areas, results show that marginal effects of the logit model indicates that children who lost their fathers when they were older than 6 have 8 percentage points less probability of completing 8^{th} grade compared to children with two parents. However, there is no robust evidence for effect of father's death on the 8^{th} grade completion because if we include parental characteristics, father's death become insignificant and do not explain 8^{th} grade completion probability. This ratio increases approximately to 38% in the second and third specifications for the 12 grade completion rates in the same group. In addition

to the urban-boy groups, the probability of completing the 8th grade reduces by 8 percentage points in the first and second specification for just boys. This probability decreases to 5.5 percentage points in the third model, where all covariates are included. The probability of completing the 12th grade is 28 percentage points lower than that of children with two parents. In addition to school completion rates, dropout rate is also analyzed to get comprehensive results on this issue. The completion rate results are also consistent with dropout results. These results suggest that, for boys who live in urban areas and between the age of 12 and 14, losing a father increases the probability of dropping out by 3.4 percentage points, assuming that other variables are held constant. There is no significant evidence for effects of the father-death since with adding parental variables; the father-death dummies are not significant any more. However, in boys, losing a father increases the probability of dropout by 2.6 percentage points in the second and third specifications at 10 percent significance level. The results suggested are nearly the same for groups whose ages are between 15 and 18. The probability of dropping out rises approximately by 15 percentage points if loss of a father was faced in children's school ages. Finally, the decision of leaving home is also tried to be explained by paternal loss. However, we cannot find any significant results, which can be explained with the fact that boys feel that they should put themselves into fathers' shoes in a traditional Turkish family. They are out of school and probably, they can enter into the work force. For girls, the explanation can be related to opportunity cost concept. We cannot find any significant relationship that shows that girls drop school or could not complete 8th grade since they are not expected to work. In addition, some specific policies on girls like 'Haydi Kızlar Okula' which is literally translated as 'Come On Girls Let's go to school', may affect school participation ratios positively in Turkey. Moreover, they can lose the networks which can lead girls to marry and leave home. Instead, they probably continue their educational life after death of father if someone in the household can earn money to sustain the needs of family. Also, meaningful results are found in urban areas of Turkey. This may be related to job opportunities and job conditions in those areas. Jobs in urban areas

generally take full time admission and money could attract families facing income shocks. Therefore, these conditions could deter the boys going to school.

In addition to father's death, the education levels of fathers and mothers have significant impact on children educational success. For children whose ages are equal to or higher than 15 and have high and above school graduate fathers, the probability of completing the 8^{th} grade increases by 3 percentage points compared to children with uneducated fathers in the logit model. This ratio is 3% for mothers' high and above education dummy.

Overall, the results show that father-death effects are associated with school completion and dropout rates of children whose age range is 6-24. However, the effect of death of fathers can only be seen significantly in boys and boys who live in urban areas for secondary and high school grades. The results are as expected for Turkey, since boys are much more suitable to take over fathers' place than girls in paternalistic societies. Moreover, maternal and paternal educational dummies become more significant when grade or age level increase.

The results suggest that death of father decreases the probability of getting more education for boys living in urban areas. Even if we try to minimize unobservable factors in our estimation by controlling children's birth place and father's educational features into the model, still some unobservable factors cannot be controlled in our models. These factors can be associated with both paternal deaths and children's educational success and make orphan-hood endogenous. Parental behavior, family genetics, and environmental characteristics can be given as general examples; for instance, fathers who had a job accident and died. The quality of job is also factor that determines the school completion ratio of children. Since job conditions are highly dependent on paternal education level, including this one, we try to reach a conclusion that orphans are more likely to drop out school.

Finally, in all specifications and models, the detrimental effects of fathers' absence are captured by boys living in urban parts of Turkey. This is generally resulted from liquidity constraints since many families are vulnerable to sudden shocks because of the lack of insurance system in Turkey. The neighborhoods are available for the same kind of aids, but educational expenses require long term commitments. Unfortunately, it is very challenging to find a long term financial supporter for the families with deceased fathers. Hence, specific policies that target male orphans could increase their educational attainment which is very crucial for their future earnings, efficiency in labor market, and marriage decisions. These specific polices should contain a mentorship as well since fathers are the source of stability in households so that possible negative spillover on future generations can be eliminated.

This study can be developed by analyzing the high school graduation ratios with a large dataset. Increasing sample size and looking at the same specific samples where observations are older than the 12^{th} grade completion age could lead to more reliable and diversified results. Moreover, information about income level before and after death could be helpful for policy choices and underlying mechanisms to eliminate the gap between orphans and non-orphans.

In this thesis, the intergenerational educational mobility in Turkey across the three female generations has been also examined. The probability of completing the 5^{th}, 8^{th}, and 12^{th} grade for children with parents coming from different educational backgrounds such as primary, secondary, and high school and above are estimated via logit models for the second generation which is girls - mothers. Similarly, the results on school completion rate of mothers coming from different parental educational backgrounds are estimated with a logit model. Hence, we can see the relative magnitude of effects of parental education occurring for two successive cohorts of women.

The logit estimation results of intergenerational transmission of education from parents to children suggest many conclusions. In the 5th grade completion rate for girls and primary school completion rates for mothers, the impacts of parental education have decreased over time for both urban and rural areas. In urban areas, having a father with high school and above diploma increases the probability of completing the 5th grade by 10 percentage points for mothers whereas it is only 1 percentage points for girls. In the 8th grade completion rate for girls and primary school completion rates for mothers, the same effect is observed except for rural areas. In rural areas, having an educated mother increases the probability of completing this grade for girls by 11 percentage points compared to that of girls with uneducated mothers whereas having an educated mother increases the probability of completing this grade for mothers by 3 percentage points compared to that of mothers with an uneducated mother. However, except for primary school dummy of fathers' educations, other paternal educational dummies are insignificant in girls' estimation. However, there is strong positive evidence for the effects of fathers' educational backgrounds on the mothers' estimation. In the 12th grade completion rate for girls and primary school completion rates for mothers, paternal education variables are not significant for girls' estimation while they are significant in mothers' estimation. For mothers' education variables, the significance of dummies, especially primary and secondary school dummies, increase their significance levels in 12th grade completion rate. For instance, having a secondary school graduate mother increases the likelihood of completing the 12th grade for girls by 21 percentage points than that of girls with an uneducated mother whereas it is 9 percentage points for mothers' analysis. This can be related to the fact that being educated started to be a choice after eight years since there is eight-year compulsory schooling law in Turkey. At this school level, the interaction between the mother - girl is higher than the interaction of the father - girl since girls tend to be motivated by their mothers. Overall, we can observe that the inequality in education has decreased over time by looking at two successive generations; first one is girls-parents, and second one is mothers-grandparents in Turkey. In the first generation, the effect of grandfathers' educations on primary, secondary, and high school

completion rate of mothers is more than that of grandfathers' and the coefficients are statistically significant. In the second generation, the parental education variables have a little explanatory power to explain the 5^{th}, 8^{th}, and 12^{th} grade completion rates in general. Specifically, if the school level rises, the effects of mothers' educations on girls' educational outcomes increases in the second generation, meaning that mothers are seen as role models for girls. In the first generation, the effects of fathers' educational variables on school completion rate have been always higher than that of mothers. This can be related to the fact that mothers have generally passive roles in the family in earlier times and the relationship between mothers and girls are put into a traditional shape. Throughout time, the role of mothers as guardians and motivators has increased in the family life.

In addition to education dummies of parents, the number of siblings is always negatively associated with school outcomes of girls and mothers. 2012 education law does not affect the 5^{th} and 8^{th} grade completion rates for all groups. Being born in a province or a district compared to being born in a village has increased the completion probability for mothers but there is relatively less effect for girls. In addition, having employed mothers increases the probability of completing the 12^{th} grade by nearly 14 percentage points for the total sample and urban girls. However, this effect disappears in the rural girls' analysis.

Overall, the results show that educational inequality coming from the channel of parents' education has diminished over time. The results are promising since the effects of fathers' education which can be seen as higher income in the family has diminished over time. The same thing is valid for 5^{th} and 8^{th} grade; however, in the 12^{th} grade completion rate, mothers' educations become more effective in the second generation than the first generation. Hence, we can conclude that girls should be motivated by mothers in order to graduate from higher degrees.

Similar to the first part of this thesis, in the second part, we try to minimize the effects of the unobservable by adding as much covariates as possible. Plenty of

factors such as intelligence and family behavior are the factors which we cannot distinguish their effects from pure parental education in our analysis. In addition, for the second generation, the selection bias problem especially related to 12^{th} grade completion proability should be overcome in the future researchers.

Finally, the educational inequality has already been diminished for some specific groups. The results are inevitably as expected since education has gained more importance in the society in a rapidly changing world. Being educated is generally taken as a sign of intelligence, hardworking and discipline. As it is explained before; for older girls, since the influence of mothers still is crucial, the relationship between mothers and girls need special attention. At that school level for girls, all mothers, whatever their education level is, should be educated and gain attention towards their girls. Women in Turkish society have difficulty reacing their deserved position in social, working and family life. The only solution to overcome this problem is not only to educate parents, but also sustain their social development which may be beneficial for their children's development. These specific polices should contain a mentorship as well, since mothers usually are the source of stability in households so that possible negative spillover on future generations can be eliminated.

This study can also be developed by analyzing the high school graduation ratios and for the groups of boys with a large dataset. Increasing sample size and adding fathers - boys aspect into the analysis make the results and conclusion more interesting for Turkey's education structure.

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Table A1: Intergenerational Transmission of Education-5th Grade Completion, Boys, Age≥12

Total VARIABLES	(1) 5th Grade	(1) Mar. Ef.	(2) 5th Grade	(2) Mar. Ef.	(3) 5th Grade	(3) Mar. Ef.	(4) 5th Grade	(4) Mar. Ef.
Mother's Education (Reference Group: Uneducated)								
Primary	0.696**	0.006**	0.417	0.003	0.288	0.002	0.250	0.002
	(0.347)	(0.003)	(0.364)	(0.003)	(0.370)	(0.003)	(0.368)	(0.003)
Secondary	0.364	0.003	-0.011	-0.000	-0.258	-0.002	-0.310	-0.003
	(0.776)	(0.005)	(0.793)	(0.006)	(0.822)	(0.008)	(0.822)	(0.008)
High School and Above	1.569	0.008	1.103	0.006	0.873	0.005	0.804	0.004
	(1.093)	(0.003)	(1.117)	(0.004)	(1.162)	(0.005)	(1.158)	(0.005)
Father's Education (Reference Group: Uneducated)								
Primary	1.453***	0.015***	1.198***	0.011***	1.127***	0.010***	1.088***	0.009***
	(0.337)	(0.005)	(0.353)	(0.004)	(0.354)	(0.004)	(0.354)	(0.004)
Secondary	3.029***	0.013***	2.696**	0.011**	2.563**	0.010**	2.452**	0.009**
	(1.041)	(0.003)	(1.050)	(0.002)	(1.053)	(0.002)	(1.055)	(0.002)
High School and Above	1.704***	0.011***	1.341**	0.008**	1.131*	0.007*	1.056*	0.006*
	(0.571)	(0.003)	(0.592)	(0.003)	(0.618)	(0.003)	(0.622)	(0.003)
Personal Characteristics								
Age			0.176**	0.001**	0.167*	0.001*	0.170*	0.001*
			(0.090)	(0.001)	(0.090)	(0.001)	(0.090)	(0.001)

Table A1 (Continued)

Total	(1)	(1)	(2)	(2)	(3)	(3)	(4)	(4)
VARIABLES	5th Grade	Mar. Ef.	5th Grade	Mar. Ef.	5th Grade	Mar. Ef.	5th Grade	Mar. Ef.
Birth Place (Reference group: Village)								
Province			0.353	0.003	-0.030	-0.000	0.027	0.000
			(0.395)	(0.003)	(0.445)	(0.003)	(0.447)	(0.003)
District			0.427	0.003	0.145	0.001	0.216	0.002
			(0.384)	(0.003)	(0.403)	(0.003)	(0.406)	(0.003)
Wealth Index (Reference Group: Rich)								
Poorest					-0.944	-0.009	-0.922	-0.009
					(0.662)	(0.008)	(0.660)	(0.008)
Poorer					-0.084	-0.001	-0.090	-0.001
					(0.670)	(0.005)	(0.670)	(0.005)
Middle					-0.149	-0.001	-0.205	-0.002
					(0.678)	(0.006)	(0.677)	(0.006)
Mother's Employment Status								
Employed							0.442	0.003
							(0.361)	(0.002)
Father's Employment Status								
Employed							0.632*	0.006*
							(0.340)	(0.004)
2012 Education								
Law	-0.591*	-0.005*	0.488	0.004	0.540	0.004	0.541	0.004
	(0.305)	(0.003)	(0.596)	(0.005)	(0.595)	(0.005)	(0.596)	(0.005)
Constant	2.904***		0.114		0.941		0.257	
	(0.289)		(1.787)		(1.923)		(1.950)	
Observations	3,267	3,267	3,267	3,267	3,267	3,267	3,267	3,267
Log lik	-225.4		-219.5		-217.2		-214.7	
Pseudo R-squared	0.0992		0.123		0.132		0.142	

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table A2: Intergenerational Transmission of Education-5th Grade Completion, Urban Boys, Age≥12

Urban	(1)	(1)	(2)	(2)	(3)	(3)	(4)	(4)
VARIABLES	5th Grade	Mar. Ef.	5th Grade	Mar. Ef.	5th Grade	Mar. Ef.	5th Grade	Mar. Ef.
Mother's Education (Reference Group: Uneducated)								
Primary	0.901*	0.007*	0.683	0.005	0.317	0.002	0.316	0.002
	(0.479)	(0.004)	(0.506)	(0.004)	(0.537)	(0.003)	(0.531)	(0.003)
Secondary	0.272	0.002	-0.023	-0.000	-0.597	-0.005	-0.651	-0.005
	(0.809)	(0.005)	(0.830)	(0.006)	(0.890)	(0.009)	(0.891)	(0.009)
High School and Above	1.669	0.008**	1.314	0.006*	0.696	0.003	0.655	0.003
	(1.124)	(0.003)	(1.151)	(0.003)	(1.220)	(0.005)	(1.216)	(0.005)
Father's Education (Reference Group: Uneducated)								
Primary	1.552***	0.013**	1.364***	0.010***	1.165**	0.008**	1.094**	0.007**
	(0.483)	(0.005)	(0.506)	(0.005)	(0.512)	(0.004)	(0.515)	(0.004)
Secondary	2.519**	0.010***	2.199**	0.009**	1.946*	0.007*	1.823	0.007
	(1.080)	(0.003)	(1.101)	(0.003)	(1.112)	(0.003)	(1.119)	(0.003)
High School and Above	1.385**	0.008**	1.144*	0.007*	0.775	0.004	0.698	0.004
	(0.638)	(0.004)	(0.657)	(0.004)	(0.686)	(0.004)	(0.690)	(0.003)
Personal Characteristics								
Age			0.136	0.001	0.130	0.001	0.140	0.001
			(0.115)	(0.001)	(0.115)	(0.001)	(0.116)	(0.001)
Sibling Number			-0.119	-0.001	-0.053	-0.000	-0.060	-0.000
			(0.106)	(0.001)	(0.106)	(0.001)	(0.106)	(0.001)

Table A2 (Continued)

Urban	(1)	(1)	(2)	(2)	(3)	(3)	(4)	(4)
VARIABLES	5th Grade	Mar. Ef.	5th Grade	Mar. Ef.	5th Grade	Mar. Ef.	5th Grade	Mar. Ef.
Birth Place (Reference group: Village)								
Province			0.881	0.007	0.524	0.003	0.602	0.004
			(0.545)	(0.005)	(0.575)	(0.004)	(0.577)	(0.004)
District			0.633	0.004	0.402	0.002	0.505	0.003
			(0.519)	(0.003)	(0.526)	(0.003)	(0.535)	(0.003)
Wealth Index (Reference Group: Rich)								
Poorest					-1.824**	-0.026**	-1.747**	-0.023**
					(0.793)	(0.021)	(0.792)	(0.019)
Poorer					-0.270	-0.002	-0.253	-0.002
					(0.814)	(0.006)	(0.812)	(0.006)
Middle					-0.658	-0.005	-0.689	-0.005
					(0.734)	(0.006)	(0.733)	(0.006)
Mother's Employment Status								
Employed							0.381	0.002
							(0.514)	(0.003)
Father's Employment Status								
Employed							0.693	0.006
							(0.501)	(0.005)
2012 Education Law	-0.305	-0.002	0.418	0.003	0.601	0.004	0.615	0.004
	(0.403)	(0.003)	(0.774)	(0.006)	(0.772)	(0.005)	(0.778)	(0.005)
Constant	2.783***		0.168		1.395		0.546	
	(0.383)		(2.391)		(2.533)		(2.623)	
Observations	2,243	2,243	2,243	2,243	2,243	2,243	2,243	2,243
Log lik	-128.9		-126.2		-121.8		-120.7	
Pseudo R-squared	0.0908		0.109		0.141		0.149	

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table A3: Intergenerational Transmission of Education-5th Grade Completion, Rural Boys, Age≥12

Rural VARIABLES	(1) 5th Grade	(1) Mar. Ef.	(2) 5th Grade	(2) Mar. Ef.	(3) 5th Grade	(3) Mar. Ef.	(4) 5th Grade	(4) Mar. Ef.
Mother's Education (Reference Group: Uneducated)								
Primary and Above	0.542	0.008	0.206	0.003	0.235	0.003	0.148	0.002
	(0.505)	(0.008)	(0.527)	(0.007)	(0.537)	(0.007)	(0.534)	(0.006)
Father's Education (Reference Group: Uneducated)								
Primary and Above	1.564***	0.041***	1.264**	0.025**	1.263**	0.024**	1.185**	0.021**
	(0.474)	(0.019)	(0.493)	(0.015)	(0.500)	(0.014)	(0.506)	(0.013)
Personal Characteristics								
Age			0.261*	0.003*	0.258*	0.003*	0.256*	0.003*
			(0.145)	(0.002)	(0.146)	(0.002)	(0.145)	(0.002)
Number of Sibling			-0.211**	-0.003**	-0.203**	-0.002**	-0.192*	-0.002*
			(0.096)	(0.001)	(0.098)	(0.001)	(0.107)	(0.001)
Birth Place (Reference group: Village)								
Province and District			0.069	0.001	0.098	0.001	0.121	0.001
			(0.779)	(0.009)	(0.810)	(0.009)	(0.808)	(0.008)
Wealth Index (Reference Group: Rich)								
Poorest					0.723	0.010	0.671	0.008
					(1.146)	(0.017)	(1.131)	(0.015)
Poorer and Middle					1.091	0.011	1.011	0.010
					(1.200)	(0.011)	(1.196)	(0.010)
Mother's Employment Status								
Employed							0.366	0.004
							(0.524)	(0.006)

Table A3 (Continued)

Rural	(1)	(1)	(2)	(2)	(3)	(3)	(4)	(4)
VARIABLES	5th Grade	Mar. Ef.	5th Grade	Mar. Ef.	5th Grade	Mar. Ef.	5th Grade	Mar. Ef.
Father's Employment Status								
Employed							0.721	0.010
							(0.482)	(0.009)
2012 Education Law	-0.949*	-0.014*	0.649	0.008	0.633	0.008	0.609	0.007
	(0.490)	(0.007)	(0.945)	(0.013)	(0.947)	(0.012)	(0.947)	(0.012)
Constant	3.106***		-0.914		-1.656		-2.166	
	(0.462)		(2.793)		(2.997)		(3.014)	
Observations	1,024	1,024	1,024	1,024	1,024	1,024	1,024	1,024
Log lik	-96.72		-92.73		-92.32		-90.85	
Pseudo R-squared	0.0897		0.127		0.131		0.145	

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table A4: Intergenerational Transmission of Education-8th Grade Completion, Boys, Age≥15

Total	(1)	(1)	(2)	(2)	(3)	(3)	(4)	(4)
VARIABLES	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.
Mother's Education (Reference Group: Uneducated)								
Primary	0.367*	0.012*	0.131	0.004	-0.031	-0.001	-0.034	-0.001
	(0.219)	(0.007)	(0.235)	(0.007)	(0.236)	(0.007)	(0.236)	(0.007)
Secondary	1.778*	0.031*	1.455	0.027	1.084	0.020	1.074	0.020
	(1.022)	(0.008)	(1.031)	(0.010)	(1.036)	(0.012)	(1.037)	(0.012)
High School and								
Above	1.862*	0.033*	1.510	0.029	1.034	0.020	1.036	0.020
	(1.044)	(0.009)	(1.056)	(0.010)	(1.069)	(0.013)	(1.069)	(0.013)
Father's Education (Reference Group: Uneducated)								
Primary	1.053***	0.037***	0.917***	0.031***	0.840***	0.025***	0.824***	0.025***
	(0.240)	(0.010)	(0.253)	(0.010)	(0.255)	(0.009)	(0.257)	(0.009)
Secondary	1.908***	0.037***	1.761***	0.034***	1.573***	0.029***	1.558***	0.028***
	(0.462)	(0.007)	(0.472)	(0.007)	(0.475)	(0.006)	(0.476)	(0.006)
High School and								
Above	2.020***	0.043***	1.806***	0.038***	1.455***	0.030***	1.437***	0.029***
	(0.474)	(0.008)	(0.487)	(0.008)	(0.494)	(0.008)	(0.495)	(0.008)
Personal Characteristics								
Age			-0.111**	-0.003**	-0.130**	-0.004**	-0.129**	-0.004**
			(0.056)	(0.002)	(0.056)	(0.002)	(0.056)	(0.002)
Sibling Number			-0.143***	-0.005***	-0.109**	-0.003**	-0.107**	-0.003**
			(0.053)	(0.002)	(0.053)	(0.002)	(0.054)	(0.002)
Birth Place (Reference group: Village)								
Province			0.076	0.002	-0.452	-0.014	-0.441	-0.013
			(0.256)	(0.008)	(0.293)	(0.009)	(0.297)	(0.009)

Table A4 (Continued)

Total	(1)	(1)	(2)	(2)	(3)	(3)	(4)	(4)
VARIABLES	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.
District			0.325	0.009	0.081	0.002	0.095	0.003
			(0.268)	(0.007)	(0.281)	(0.008)	(0.283)	(0.008)
Wealth Index (Reference Group: Rich)								
Poorest					-1.612***	-0.073***	-1.610***	-0.073***
					(0.459)	(0.030)	(0.459)	(0.030)
Poorer					-1.139***	-0.045***	-1.142***	-0.045***
					(0.433)	(0.022)	(0.433)	(0.022)
Middle					-0.586	-0.020	-0.591	-0.020
Father's Employment Status					(0.461)	(0.018)	(0.461)	(0.018)
Employed							0.062	0.002
Father's Employment Status							(0.229)	(0.006)
Employed							0.125	0.004
							(0.267)	(0.008)
2012 Education								
Law	-0.277	-0.010	-0.724**	-0.026**	-0.697**	-0.023**	-0.695**	-0.023**
	(0.219)	(0.008)	(0.346)	(0.015)	(0.347)	(0.013)	(0.347)	(0.013)
Constant	1.714***		4.487***		6.203***		6.061***	
	(0.197)		(1.190)		(1.296)		(1.322)	
Observations	2,187	2,187	2,187	2,187	2,187	2,187	2,187	2,187
Log lik	-389.6		-383.1		-374.8		-374.6	
Pseudo R-squared	0.0815		0.0969		0.117		0.117	

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A5: Intergenerational Transmission of Education-8th Grade Completion, Urban Boys, Age≥15

Urban VARIABLES	(1) 8th Grade	(1) Mar. Ef.	(2) 8th Grade	(2) Mar. Ef.	(3) 8th Grade	(3) Mar. Ef.	(4) 8th Grade	(4) Mar. Ef.
Mother's Education (Reference Group: Uneducated)								
Primary	0.258	0.006	0.031	0.001	-0.219	-0.005	-0.203	-0.004
	(0.283)	(0.007)	(0.308)	(0.007)	(0.317)	(0.007)	(0.318)	(0.007)
Secondary and Above	2.356**	0.034**	2.050*	0.030*	1.574	0.023	1.602	0.023
	(1.043)	(0.008)	(1.055)	(0.008)	(1.065)	(0.009)	(1.068)	(0.009)
Father's Education (Reference Group: Uneducated)								
Primary	1.250***	0.032***	1.200***	0.030***	1.123***	0.025***	1.133***	0.025***
	(0.315)	(0.011)	(0.329)	(0.011)	(0.332)	(0.010)	(0.334)	(0.010)
Secondary	2.730***	0.034***	2.629***	0.032***	2.423***	0.028***	2.447***	0.027***
	(0.762)	(0.008)	(0.773)	(0.008)	(0.778)	(0.007)	(0.779)	(0.007)
High School and Above	1.950***	0.034***	1.841***	0.032***	1.521***	0.025***	1.515***	0.024***
	(0.500)	(0.009)	(0.512)	(0.009)	(0.520)	(0.008)	(0.520)	(0.008)
Personal Characteristics								
Age			-0.084	-0.002	-0.093	-0.002	-0.088	-0.002
			(0.067)	(0.002)	(0.067)	(0.001)	(0.067)	(0.001)
Number of Sibling			-0.139*	-0.003*	-0.092	-0.002	-0.093	-0.002
			(0.073)	(0.002)	(0.074)	(0.002)	(0.075)	(0.002)
Birth Place (Reference group: Village)								
Province			0.165	0.004	-0.121	-0.003	-0.161	-0.003
			(0.350)	(0.008)	(0.369)	(0.008)	(0.374)	(0.008)

Table A5 (Continued)

Urban VARIABLES	(1) 8th Grade	(1) Mar. Ef.	(2) 8th Grade	(2) Mar. Ef.	(3) 8th Grade	(3) Mar. Ef.	(4) 8th Grade	(4) Mar. Ef.
District			0.360	0.008	0.294	0.006	0.292	0.006
			(0.359)	(0.008)	(0.364)	(0.007)	(0.368)	(0.007)
Wealth Index (Reference Group: Rich)								
Poorer					-1.109**	-0.032**	-1.119**	-0.032**
					(0.447)	(0.017)	(0.449)	(0.017)
Middle					-0.655	-0.016	-0.666	-0.017
					(0.462)	(0.013)	(0.462)	(0.013)
Mother's Employment Status								
Employed							-0.268	-0.006
							(0.292)	(0.007)
2012 Education Law	0.165	0.004	-0.230	-0.006	-0.146	-0.003	-0.128	-0.003
	(0.315)	(0.007)	(0.449)	(0.012)	(0.452)	(0.010)	(0.453)	(0.010)
Constant	1.501***		3.544**		4.842***		4.606***	
	(0.256)		(1.466)		(1.542)		(1.610)	
Observations	1,514	1,514	1,514	1,514	1,514	1,514	1,514	1,514
Log lik	-236.9		-233.8		-227.6		-227	
Pseudo R-squared	0.106		0.118		0.141		0.144	

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A6: Intergenerational Transmission of Education-8th Grade Completion, Rural Boys, Age≥15

Rural	(1)	(1)	(2)	(2)	(3)	(3)	(4)	(4)
VARIABLES	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.
Mother's Education (Reference Group: Uneducated)								
Primary	0.561	0.028	0.295	0.013	0.213	0.004	0.219	0.004
	(0.355)	(0.017)	(0.373)	(0.016)	(0.370)	(0.160)	(0.370)	(0.159)
Secondary and Above	0.296	0.013	-0.125	-0.006	-0.734	-0.021	-0.740	-0.021
	(1.089)	(0.041)	(1.146)	(0.054)	(1.169)	(0.759)	(1.175)	(0.739)
Father's Education (Reference Group: Uneducated)								
Primary	0.807**	0.044**	0.617	0.029	0.572	0.013	0.565	0.012
	(0.374)	(0.023)	(0.404)	(0.020)	(0.406)	(0.463)	(0.414)	(0.439)
Secondary and Above	1.555**	0.055**	1.364**	0.043**	1.089*	0.017*	1.066	0.016
	(0.618)	(0.016)	(0.639)	(0.015)	(0.637)	(0.640)	(0.649)	(0.604)
Personal Characteristics								
Age			-0.161	-0.007	-0.175*	-0.004*	-0.181*	-0.004*
			(0.103)	(0.004)	(0.104)	(0.131)	(0.105)	(0.131)
Number of Sibling			-0.139*	-0.006*	-0.096	-0.002	-0.069	-0.001
			(0.078)	(0.003)	(0.079)	(0.072)	(0.082)	(0.050)

Table A6 (Continued)

Rural	(1)	(1)	(2)	(2)	(3)	(3)	(4)	(4)
VARIABLES	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.	8th Grade	Mar. Ef.
Birth Place (Reference group: Village)								
Province			-0.443	-0.023	-0.585	-0.015	-0.447	-0.011
			(0.804)	(0.049)	(0.819)	(0.565)	(0.831)	(0.392)
District			1.542	0.041	1.363	0.018	1.431	0.018
			(1.037)	(0.015)	(1.042)	(0.670)	(1.041)	(0.663)
Wealth Index (Reference Group: Rich)								
Poorest					-14.041	-0.881	-14.038	-0.878
					(668.334)	(25.158)	(659.468)	(25.396)
Poorer and Middle					-13.050	-0.989	-13.025	-0.988
					(668.334)	(4.287)	(659.468)	(4.419)
Mother's Employment Status								
Employed							0.478	0.009
							(0.373)	(0.341)
Father's Employment Status								
Employed							0.106	0.002
							(0.415)	(0.080)
2012 Education								-
Law	-0.846**	-0.048**	-1.466**	-0.084**	-1.450**	-0.040**	-1.481**	0.040**
	(0.330)	(0.021)	(0.593)	(0.043)	(0.599)	(1.458)	(0.602)	(1.443)
Constant	2.055***		5.895***		19.868		19.637	
	(0.318)		(2.176)		(668.338)		(659.471)	
Observations	673	673	673	673	673	673	673	673
Log lik	-147.8		-142.9		-138.9		-137.9	
Pseudo R-squared	0. 0595		0.0911		0.116		0.123	

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table A7: Intergenerational Transmission of Education-12th Grade Completion, Boys, Age≥19

Total	(1)	(1)	(2)	(2)	(3)	(3)	(4)	(4)
VARIABLES	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.
Mother's Education (Reference Group: Uneducated)								
Primary	0.471***	0.110***	0.270	0.063	0.204	0.047	0.210	0.049
	(0.156)	(0.036)	(0.169)	(0.039)	(0.173)	(0.040)	(0.173)	(0.040)
Secondary	0.949***	0.232***	0.702**	0.172**	0.582*	0.142*	0.594*	0.145*
	(0.331)	(0.080)	(0.346)	(0.086)	(0.353)	(0.088)	(0.353)	(0.088)
High School and								
Above	1.027***	0.251***	0.747**	0.182**	0.626**	0.152**	0.636**	0.155**
	(0.292)	(0.069)	(0.309)	(0.076)	(0.317)	(0.079)	(0.318)	(0.079)
Father's Education (Reference Group: Uneducated)								
Primary	0.004	0.001	-0.154	-0.036	-0.204	-0.048	-0.198	-0.046
	(0.241)	(0.056)	(0.250)	(0.058)	(0.253)	(0.059)	(0.254)	(0.059)
Secondary	0.090	0.021	-0.075	-0.017	-0.152	-0.035	-0.147	-0.034
	(0.288)	(0.068)	(0.297)	(0.068)	(0.302)	(0.068)	(0.303)	(0.068)
High School and								
Above	0.779***	0.189***	0.597**	0.144**	0.501*	0.120*	0.496*	0.119*
	(0.278)	(0.068)	(0.289)	(0.071)	(0.294)	(0.072)	(0.295)	(0.072)
Personal Characteristics								
Age			0.122***	0.028***	0.117***	0.027***	0.118***	0.028***
			(0.043)	(0.010)	(0.043)	(0.010)	(0.043)	(0.010)
Number of Sibling			-0.142***	-0.033***	-0.131***	-0.031***	-0.135***	-0.031***
			(0.048)	(0.011)	(0.048)	(0.011)	(0.049)	(0.011)

Table A7 (Continued)

Total	(1)	(1)	(2)	(2)	(3)	(3)	(4)	(4)
VARIABLES	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.
Birth Place (Reference group: Village)								
Province			0.141	0.033	-0.055	-0.013	-0.076	-0.018
			(0.170)	(0.040)	(0.189)	(0.044)	(0.191)	(0.044)
District			0.163	0.038	0.038	0.009	0.022	0.005
			(0.183)	(0.043)	(0.191)	(0.045)	(0.193)	(0.045)
Wealth Index (Reference Group: Rich)								
Poorest					-0.591**	-0.130**	-0.588**	-0.129**
					(0.253)	(0.052)	(0.253)	(0.052)
Poorer					-0.222	-0.051	-0.220	-0.050
					(0.204)	(0.046)	(0.205)	(0.046)
Middle					-0.121	-0.028	-0.121	-0.028
					(0.198)	(0.045)	(0.198)	(0.045)
Mother's Employment Status								
Employed							-0.109	-0.025
Father's Employment Status							(0.151)	(0.035)
Employed							(0.185)	(0.043)
	-1.044***		-3.113***		-2.622***		-2.620***	
Constant	(0.217)		(0.955)		(0.984)		(0.993)	
Observations	965	965	965	965	965	965	965	965
Log lik	-612.1		-602.2		-599.3		-599	
Pseudo R-squared	0.0429		0.0584		0.0629		0.0633	

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A8: Intergenerational Transmission of Education-12th Grade Completion, Urban Boys, Age≥19

Urban	(1)	(1)	(2)	(2)	(3)	(3)	(4)	(4)
VARIABLES	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.
Mother's Education (Reference Group: Uneducated)								
Primary	0.390**	0.094**	0.287	0.069	0.217	0.053	0.234	0.057
	(0.188)	(0.045)	(0.204)	(0.049)	(0.210)	(0.051)	(0.211)	(0.051)
Secondary	0.886**	0.218**	0.816**	0.201**	0.708*	0.175*	0.725*	0.179*
	(0.373)	(0.088)	(0.390)	(0.093)	(0.399)	(0.097)	(0.399)	(0.097)
High School and Above	0.907***	0.223***	0.782**	0.193**	0.670*	0.166**	0.710**	0.175**
	(0.312)	(0.074)	(0.334)	(0.081)	(0.344)	(0.084)	(0.346)	(0.085)
Father's Education (Reference Group: Uneducated)								
Primary	0.085	0.021	-0.018	-0.004	-0.047	-0.011	-0.035	-0.008
	(0.312)	(0.076)	(0.321)	(0.078)	(0.324)	(0.079)	(0.325)	(0.079)
Secondary	0.288	0.071	0.169	0.041	0.116	0.028	0.128	0.031
	(0.364)	(0.090)	(0.374)	(0.092)	(0.379)	(0.093)	(0.380)	(0.093)
High School and Above	0.785**	0.193**	0.703**	0.173**	0.629*	0.155*	0.620*	0.152*
	(0.342)	(0.083)	(0.352)	(0.086)	(0.358)	(0.088)	(0.359)	(0.088)
Personal Characteristics								
Age			0.141***	0.034***	0.141***	0.034***	0.143***	0.035***
			(0.050)	(0.012)	(0.050)	(0.012)	(0.050)	(0.012)
Number of Sibling			-0.097*	-0.024*	-0.085	-0.021	-0.092	-0.022
			(0.058)	(0.014)	(0.059)	(0.014)	(0.059)	(0.014)

Table A8 (Continued)

Urban	(1)	(1)	(2)	(2)	(3)	(3)	(4)	(4)
VARIABLES	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.
Birth Place (Reference group: Village)								
Province			-0.100	-0.024	-0.165	-0.040	-0.180	-0.044
			(0.231)	(0.056)	(0.236)	(0.057)	(0.238)	(0.058)
District			-0.008	-0.002	-0.011	-0.003	-0.014	-0.003
			(0.244)	(0.059)	(0.245)	(0.059)	(0.247)	(0.060)
Wealth Index (Reference Group: Rich)								
Poorest					-0.466	-0.108	-0.446	-0.103
					(0.370)	(0.080)	(0.370)	(0.081)
Poorer					-0.267	-0.064	-0.259	-0.062
					(0.231)	(0.054)	(0.232)	(0.055)
Middle					-0.148	-0.036	-0.152	-0.037
					(0.211)	(0.050)	(0.211)	(0.050)
Mother's Employment Status								
Employed							-0.212	-0.051
							(0.182)	(0.043)
Father's Employment Status								
Employed							0.125	0.030
							(0.223)	(0.053)
Constant	-0.958***		-3.513***		-3.266***		-3.351***	
	(0.291)		(1.133)		(1.150)		(1.167)	
Observations	684	684	684	684	684	684	684	684
Log lik	-447		-441.3		-440.2		-439.4	
Pseudo R-squared	0.0385		0.0507		0.0530		0.0548	

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table A9: Intergenerational Transmission of Education-12th Grade Completion, Rural Boys, Age≥19

Rural	(1)	(1)	(2)	(2)	(3)	(3)	(4)	(4)
VARIABLES	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.
Mother's Education (Reference Group: Uneducated)								
Primary	0.497*	0.100*	0.210	0.040	0.194	0.037	0.170	0.032
	(0.297)	(0.060)	(0.317)	(0.061)	(0.320)	(0.062)	(0.322)	(0.062)
Secondary	0.729	0.163	0.515	0.109	0.461	0.096	0.484	0.101
	(0.777)	(0.189)	(0.816)	(0.188)	(0.838)	(0.190)	(0.848)	(0.192)
High School and Above	1.188	0.278	0.708	0.155	0.632	0.136	0.780	0.171
	(1.063)	(0.262)	(1.081)	(0.261)	(1.083)	(0.257)	(1.083)	(0.263)
Father's Education (Reference Group: Uneducated)								
Primary	-0.192	-0.038	-0.685	-0.134	-0.661	-0.129	-0.636	-0.123
	(0.388)	(0.078)	(0.429)	(0.085)	(0.432)	(0.085)	(0.438)	(0.086)
Secondary	-0.369	-0.069	-0.684	-0.115	-0.747	-0.124	-0.673	-0.113
	(0.502)	(0.087)	(0.529)	(0.077)	(0.538)	(0.076)	(0.548)	(0.080)
High School and Above	0.697	0.154	0.097	0.019	0.102	0.020	0.233	0.046
	(0.568)	(0.136)	(0.606)	(0.120)	(0.614)	(0.122)	(0.629)	(0.130)
Personal Characteristics								
Age			0.033	0.006	0.025	0.005	0.017	0.003
			(0.089)	(0.017)	(0.089)	(0.017)	(0.091)	(0.017)
Number of Sibling			-0.316***	-0.060***	-0.291***	-0.055***	-0.286***	-0.054***
			(0.096)	(0.018)	(0.098)	(0.018)	(0.099)	(0.018)
Birth Place (Reference group: Village)								
Province			-0.330	-0.058	-0.321	-0.056	-0.274	-0.049
			(0.756)	(0.122)	(0.766)	(0.124)	(0.780)	(0.129)

Table A9 (Continued)

Rural	(1)	(1)	(2)	(2)	(3)	(3)	(4)	(4)
VARIABLES	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.	12th Grade	Mar. Ef.
District			-0.429	-0.075	-0.466	-0.080	-0.456	-0.078
			(0.499)	(0.079)	(0.506)	(0.078)	(0.513)	(0.079)
Wealth Index (Reference Group: Rich)								
Poorest					-0.050	-0.010	0.073	0.014
					(0.648)	(0.124)	(0.650)	(0.123)
Poorer					0.323	0.064	0.426	0.084
					(0.639)	(0.130)	(0.641)	(0.132)
Middle					0.339	0.068	0.393	0.079
					(0.697)	(0.147)	(0.696)	(0.149)
Mother's Employment Status								
Employed							0.313	0.060
							(0.294)	(0.056)
Father's Employment Status								
Employed							-0.373	-0.074
							(0.357)	(0.074)
Constant	-1.122***		-0.549		-0.534		-0.368	
	(0.327)		(1.948)		(2.079)		(2.087)	
Observations	281	281	281	281	281	281	281	281
Log lik	-161.4		-154.6		-153.8		-152.8	
Pseudo R-squared	0.0277		0.0685		0.0734		0.0794	

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

B. TURKISH SUMMARY / TÜRKÇE ÖZET

Bu tez, Türkiye için çocukluk çağında baba kaybının çocukların eğitime devam etmeleri ve nesiller arası eğitim aktarımının kız çocukları için durumu incelenmiştir. İlk olarak, baba ölümü ile ilgili bulgular özetlenecektir. Çocuklukta yaşanan baba ölümü, çoçuklar birçok yönden olumsuz etkilemektedir. Çalışmalar, babası ölmüş çocuklarının, okul başarılarının daha düşük, sağlıklarının daha kötü olduğunu göstermektedir (Case ve Ardington, 2006) Hatta, hatta uzun dönemde kazanacakları gelir ve evlilik kararlarının dahi bu durumdan etkilendiği çalışmalarca gösterilmiştir. Yaşanılan bu travmatik şokun yanı sıra, anne ve babanın eğitimleri de çocukların eğitim başarılarını etkilemektedir (Dubow vd., 2009).

Çocuğun eğitim hayatı öncesinde veya eğitim hayatı sırasında babasını kaybetmesi sonucu hem psikolojik hem de maddi nedenlerden ötürü çoçukların daha az fırsatlara sahip olduğu fikrini öne sürmektedir. Bu fikir, yetimlik ve eğitim düzeyi durumlarını inceleyen birçok çalışma tarafından, yetim olma halinin eğitim, sağlık düzeyleri, gelecekte kazanılan gelir, evlilik kararlarını olumsuz etkilediği desteklenmiştir (Grogger ve Ronan, 1995; Gimenez vd., 2012). Ancak yetimlik ve eğitim her zaman nedensellik göstermez. Çoçukların eğitim hayatı ve babalarının ölümü arasındaki benzerlik doğrudan gözlemlenemeyen etkenler nedeniyle de gerçekleşebilir. Ancak bu durumun, baba ölümünün ani ve beklenmedik bir olay olması nedeniyle oluşma ihtimali azdır. Eğer baba eğitim yetersizliğinden kaynaklı iş güvenliği az iş yerlerinde çalışıp ve bu sebepten de öldüyse, buradaki gözlenemeyen özellik olan babanın az eğitimli olması çoçuğun da az eğitimli olmasını etkileyebilir. Ancak, biz babanın da eğitim bilgilerini kontrol ederek, gözlenemeyen özelllikleri azaltmaya çalışmaktayız.

Yetimliğin çocokların eğitim durumlarına etkisini ve dinamiklerini incelemek, çocuklara eşit imkanlar sunmak ve fırsat eşitliğinin sağlanmasında doğru politikanın uygulanması açısından önemlidir. Yetimlerin eğitim düzeyleri arasındaki negatif

ilişki, eğitimde babanın hem maddi hem de manevi rolünün olduğunu göstermektedir. Bu durum ise, yetimler ve yetim olmayan çoçuklar arasında fırsat eşitliğinde bir adaletsizlik olduğunu göstermektedir. Buna ek olarak, yetimliğin çoçuğun eğitim hayatına etkisinin kanallarını incelemek de en doğru ve etkili politikayı uygulamak açısından önemlidir. Eğer yetimlerin eğitim yetersizliklerinin nedeni, ailelerin sınırlı finansal kaynaklarından kaynaklanıyor ise; ailelere yapılan maddi yardımlar, fırsat eşitsizliğini ortadan kaldırabilir. Öte yandan, eğer yetimliğin çoçuk eğitimi üzerine etkisi, aile bireylerinin düşük eğitim düzeyi ya da aileden aktarılan davranışlar nedeniyle gerçekleşiyorsa; yapılan finansal yardımların durumu değiştirmede herhangi bir etkisi olmayacaktır.

Yetimlilik halinin eğiitm hayatına etkisi düşünülerek, bu çalışmada Türkiye'de baba ölümünün çoçuğun eğitim hayatına etkisi araştırılmıştır. Bu tezde temel olarak, baba ölümü çeşitli yaşlardaki çoçukların ilkokul, ortaokul, ve lise okul seviyelerini bitirip bitirmeme durumlarını etkiler mi, hangi yaş aralığında yaşanan baba ölümü çoçuğun eğitim hayatını daha çok etkiler, ve baba ölümünün çocukların evden ayrılmasını etkileyip etkilemediği sorularına cevap aranmaktadır.

Bu tez, Türkiye'de baba ölümünün çoçuk eğitim hayatına etkisini araştırarak literatüre katkı sağlamaktadır. Yetimliliğin çeşitli eğitim seviyeleri için etkisini gözlemleyebilmek için, aynı yaş grubundaki çoçukların hem babalarının ölümden önce hem de sonrası dönemlerini kapsayan uzun dönemli bir veri gerekmektedir. Ne yazık ki, Türkiye'de bu alanda kapsamlı bir veri seti mevcut değildir. Ancak, Hacettepe Nüfus Araştırmaları Kurumu tarafından yapılan Nüfus ve Sağlık veri setinin 2013 döneminin içerdiği, kadının evlilik tarihçesi anketi sayesinde, ankette yer alan 15-49 yaş arasındaki kadınların evliliklerinin ne zaman bittiği ve dolayısıyla da çoçukların babalarının ne zaman öldüğü gözlenmektedir. Bu anket kişilerin ailelerinin ekonomik durumu ve anne babalarının özelliklerinin yanı sıra, kişilerin hane ve bireysel özelliklerini de içermektedir. Çalışmadaki örneklem 15-49 yaş arasındaki kadınların aynı evde yaşadıkları çoçuk sayıları ile sınırlıdır. Yani

çoçukların eğitim durumları sadece aynı evde yaşayan çoçuklar ile sınırlıdır. İki veri setini annenin kimlik numarası ile birleştikten sonra, 14,967 çocuk içinden, 6-24 yaş aralığındaki 10,332 çoçuk örneklemimizi oluşturmuştur. Ancak biz, yetim kalan çoçukların sadece iki ebeveyni de olan çoçuklarla karşılaştırmak ve gelir etkisinin de çocukların eğitim hayatına etkisini tam anlamıyla görebilmek için, üvey baba ile yaşayan yetimleri örneklemimizden çıkararak, 10,241 çocuğa analizleri uyguladık. Örneklemden çıkarılan diğer 10 gözlem ise, kadınların evlilik tarihçesinde evlilik bitiş tarihlerinin kayıt edilmemesinden dolayıdır çünkü analizlerde babanın ölüm tarihi ile alakalı olarak birçok farklı yetimlik tanımları yapılmıştır. Dahası, 33 yetim olmayan çocuğu da örneklemimizden çıkardık, çünkü annelerinin ve babalarının evlilik yaşları bilinmemektedir. Ebeveynlik evlilik yaşları logit modellerimize dahil olduğundan, bu gözlemleri bırakıyoruz. Sonunda, bizim örneklemimiz 4656 annesiyle 10.197 çocuktan oluşmaktadır.

Literatürde yetimliğin çocuğun eğitim seviyesine etkisini ölçmek için, genelde panel veri setleri kullnaılmış ve aynı yaş grubundaki daha fazla sayıdaki insanın belli bir eğitim seviyesini bitirip bitiremediği ölçülmüştür. Bizim analizimizde, yetimliğin ilkoul, ortaokul, lise seviyelerini yaşları sırasıyla 11, 14, ve 18'den büyük çocuklar için okulu bitime kukla değişkeni yaratarak incelenmiştir. Veri setine göre, örneklein %2'si yetimlerden oluşmaktadır.
Çocukların yaş grupları ilerledikçe, yetim oranlarında artış gözlemlenmektedir. Yetimler arasında, baba ölümünün yaşandığı her yaş grubunda ise, ortalama %4 ve %8 arasında değişen bir ölümle karşılaşma ihtimali vardır.

Baba ölümüyle karşılaşılan yaş grupları arasında, en çok etkinin hangi yaş grubunda olduğunu anlamak için, babanın yaşayıp yaşamadığını temsil eden farklı kukla değişkenleri tanımlanmış ve etki her okul seviyesi için incelenmiştir. Veri bölümde, yıllar ilerledikçe, daha erken seviyelerde karşılaşılan ölümün etkisinin eğitim seviyeleri üzerine etkisi azalırkan, bunun nedeni ailelerin geçen sürede yeni finansal

durumlarına uyum sağlamaları ve geleneksel Türk aile ve komşuluk ilişkileriyle açıklanabilir.

Çoçukların anne ve babaların özellikleri incelendiğinde, anne ve babaların eğitim özellikleri arasında önemli farklar gözlemlenmektedir. Annelerin iş gücüne katılım oranı %30 iken, bu oran yetimler ve yetim olmayan çocuklar arasında farklılaşmamaktadır. Hem anne hem de babaların ortalama eğitim seviyeleri genel olarak düşük düzeydedir; ancak bu durum anneler için daha çok belirgindir. Annelerin %30'unun eğitimi yokken; bu oran baba eğitimi için yetimlerde %14, yetim olmayanlarda ise %10'a düşmektedir. Annelerin %13'ü liseden mezun olmuşken, babaların ise %25'i lise ve üzeri bir okuldan mezundur. En düşük varlık seviyesinde yetimler ve yetim olmayanlar arasında pek bir fark bulunmazken, en yüksek varlık seviyesinde ise, yetimlerin ailelerinin %15'i, yetim olmayanların ise %30'u bu katagoriye aittir. Ayrıca, yetimlerin %49'u kentlerde yaşarken, kırsalda yaşayanlar için bu oran %46'dır. Yetimler için ortalama yaş 16 iken, yetim olmayanlar için ise yaş 14'e düşmektedir. Ayrıca, kız erkek gözlem sayısı birbirine çok yakındır.

Çalışmada, baba ölümü için biri okul çağından önce, diğeri de okul çağında olmak üzere iki tane kukla değişkeni yaratılmış, bunların hangisinin etkisinin daha çok olduğunu anlamak için ikisi de modellere koyulmuştur. Baba ölümünün okulu bırakmadan daha önce gerçekleştiğinden emin olmak için, ilkokul, ortaokul ve lise için, babayı kaybetme yaş üst sınırı 11, 14, ve 18 olarak belirlenmiştir. Ayrıca okulu bırakma oranlarının incelenmesinde, ortaokul ve liseden terkler için, 11 ve 14 yaşı baba ölümüyle karşılaşmak için konulan yaş üst sınırlarıdır. Evden ayrılma oranının incelenmesinde ise sadece 14 yaşından büyük örneklem üzerinden analiz yapılmıştır ve çocuğun babası öldüğündeki yaşının 14'ten az olması garanti edilmiştir.

Veri seti incelendiğinde, erkekeklerde oratokul ve lise seviyesinde, yetimlerin sözü geçen okul seviyelerini tamamlama olasılıklarının iki ebeveyni olan çocuklara

nazaran daha düşük olduğu gözlemlenmektedir. Kızlarda da ortaokul ve lise seviyelerini tamamlama olasılıkları verilerin ortalamalarına baktığımızda düşükken, bu fark anlamlı değildir. Okul bırakma oranlarına baktığımızda, oratokul ve lise seviyesindeki yaşlarda, özellikle erkeklerde anlamlı bir fark yakalarken, belirli yaşlar için gözlem sayısı az olduğundan, yaş gruplarına bakılarak yorum yapılması daha sağlıklı bulunmuştur.

Çalışmada, yetim olma durumu ve eğitim alma arasındaki ilişkiyi incelemek için logit modeli kullanılmıştır. Hesaplamaları yapmak için STATA programı kullanılmıştır. Bütün modellerde kukla değişkenleri olan ilkokulu, ortaokulu ve liseyi bitimeyi ya da bırakmayı temsil eden bağımlı değişkenler baba ölümü ile ilgili yaratılan iki baba ölümü kukla değişkenine ve anne ile babanın eğitim durumlarını, doğum yerleri ve evlendikleri zamanki yaşları gibi dışsal değişkenler ile açıklanmaya çalışılmıştır. Aynı değişkenler evden ayrılma ihtimali için de geçerlidir. Analizler erkek-kız, ve kentsel-kırsal şeması çerçevesinde ve herbir okul seviyesi için kendinden bir önceki seviyeyi bitirmiş olanlar için uygulanmıştır.

Logit modelinden elde edilen sonuçlar, kentsel bölgelerde yaşayan erkeklerin ortaokul ve lise bitirme olasılıklarının, annesi ve babası ile yaşayan çocuklara nazaran düştüğü yönündedir. Ayrıca, bu etki eğer çocuk babasını okul çağında (6-14/6-18) kaybetmiş ise anlamlıdır. Yani, aileler, bu travmatik olayla ne kadar erken karşılaşırlarsa, çocukların eğitim hayatları o derece az etkilenmektedir. Hatta, analizler bir diğer ilginç sonucu doğurmuştur ki bu bazı sınıflandırmalarda, 0-5 yaş aralığında karşılaşılan baba ölümlerinin okul tamamlama ihtimalinde pozitif bir etkisi vardır. Üç ayrı eğitim seviyesi ayrı ayrı incelendiğinde, ilkokul tamamlanma oranları 6-24 yaş aralığındaki örneklemimiz için yüksektir, çünkü tüm gözlemler 1997 Türk Zorunlu eğitim yasasından etkilenmektedir. Kentsel alanlarda yaşayan çocuklar için, sonuçlar, logit modelinin marjinal etkilerinin, babalarından 6 yaşından büyükken kaybettikleri çocukların, iki ebeveynli çocuklara kıyasla ortaokul bitirme olasılığının 8 puan daha düşük olduğunu gösterdiğini göstermektedir. Bununla birlikte, 8. sınıfın

tamamlanmada babaların ölümlerinin etkileri konusunda sağlam bir kanıt bulunmamaktadır çünkü ebeveyn özelliklerini de modele eklediğimizde, baba ölümü anlamsız hale gelir ve orta öğretim okulunun tamamlanmasını açıklayamaz. Bu oran, lise bitirme oranları için kişisel ve ailesel özelliklerin eklendiği ikinci ve üçüncü modellerde yaklaşık % 38'e yükselmektedir. Kent-erkek grubuna ek olarak, birinci ve ikinci şartnamede 8. sınıfta tamamlama olasılığı yüzde 8 puan azalmaktadır. Bu olasılık, tüm eşdeğişkenlerin dahil edildiği üçüncü modelde, yüzde 5,5 puana düşmektedir. Yetimlerin 12. sınıfa tamamlama olasılığı, iki ebeveynli çocuğa göre yüzde 28 puan daha düşüktür. Okula devam etme oranlarına ek olarak, bu konuda kapsamlı sonuçlar almak için okuldan ayrılma oranı da analiz edilmiştir. Tamamlama oranı sonuçları, bırakma sonuçlarıyla da tutarlıdır. Bu sonuçlar, kentsel alanlarda yaşayan ve 12-14 yaşları arasında yaşayan erkek çocukların babalarını kaybetmelerinin, diğer değişkenlerin sabit tutulduğunu varsayarak, bırakma olasılığını yüzde 3.4 puan artırdığını göstermektedir. Ebeveyn değişkenleri eklenmesinden sonra baba-ölümün etkileri için önemli bir kanıt bulunmamaktadır. Baba ölüm kuklaları artık önemli değildir. Bununla birlikte, erkeklerde, babanın kaybı, ikinci ve üçüncü şartlarda yüzde 10 anlamlılık düzeyinde, bırakma olasılığını yüzde 2.6 puan arttıracaktır. Önerilen sonuçlar, yaşları 15 ile 18 arasında olan grup için neredeyse aynıdır. Baba kaybı çocukların okul yaşlarında yaşanıyorsa, okuldan ayrılma olasılığı yaklaşık 15 puan artmaktadır. Son olarak, evden ayrılma kararı da baba kaybı ile açıklanmaya çalışılmıştır. Bu bağlamda anlamlı bir sonuç bulamadık ki bu, erkeklerin geleneksel bir Türk ailesinde kendilerini ölen babalarının yerine koymaları gerektiği ile açıklanabilir. Erkekler okula gitmeyi bırakıp ve büyük olasılıkla iş gücüne girmişlerdir. Kızlar için, açıklama fırsat maliyeti kavramıyla ilgili olabilir. Kızların babaları öldükten sonra çalışması beklenmediğinden, kızların okulu bıraktıklarını ya da orta öğretim derecesini tamamlayamadığını gösteren anlamlı bir ilişki bulamadık.

Son olarak, bazı özel kentsel alanlarda yaşayan erkekler gibi özel gruplarda, yetimlilik ile okul tamamalama ihtimali arasında negatif bir ilişki görülmektedir. Bu

bağlamda, eğitimde fırsat eşitliğini sağlamak adına uygulanan politikalar, baba ölümünün negatif etkilerini sistemden uzaklaştırarak olabilir.

Bu çalışmada, sınırlı sayıdaki gözlemlerde, her okul seviyesi incelenmeye çalışılmıştır ancak baba ölüm tarihlerinin bilindiği daha geniş bir örneklem ile çalışma daha da ileriye götürülebilir. Ayrıca, anne ölümünün etkisi de araştırılması gereken bir diğer ilginç konudur ki anne ve baba ölümlerinin etkilerinin karşılaştırılması Türkiye için yapılacak bir diğer yeniliktir. Buna ek olarak, çalışma, ileride, yetimliği ve eğtim yetersizliğini etkileyen doğrudan gözlemlenemeyen faktörlerin incelenmesiyle de geliştirilebilir. Tüm bu incelemeler, yetim çocukların eşit olanaklar sağlamak için doğru ve etkili politikanın uygulanmasına fayda sağlayacaktır.

Bu tezin ikinci bölümünde, üç nesil boyunca Türkiye'de kuşaklar arası eğitim hareketlilği incelenmiştir. İlkokul, ortaokul ve lise gibi farklı eğitim geçmişlerinden gelen ebeveynlerin 5., 8. ve 12. sınıflarını tamamlama olasılığı, kız çocukları olan ikinci kuşak için logit modelleri kullanılarak tahmin edilmektedir.

Ebeveynlerden çocuklara nesiller arası eğitim aktarımının logit tahmini sonuçları pek çok sonuca varmamızı sağlamıştır. Kızların 5. sınıf tamamlama oranı ve anneler için ilkokul bitirme oranları incelemdiğinde, ebeveyn eğitiminin etkilerini hem kentsel hem de kırsal alanlarda zamanla azalmıştır. Kentsel alanlarda, lise ve üzeri diplomasına sahip bir baba sahibi olmak, anneler için 5. sınıfta tamamlama olasılığını yüzde 10 puan artarken, kızlar için sadece yüzde 1 puan artmaktadır. Kızların 8. sınıf tamamlama oranı ve anneler için ilkokul bitirme oranları, kırsal alanlar hariç aynı etkiyi göstermektedir. Kırsal alanlarda, eğitim görmüş anneler, eğitimsiz annelerle karşılaştırıldığında kızlar için 8. sınıfı tamamlama olasılığını yüzde 11 puan arttırırken, eğitimli annelere sahip olan anneler bu notu, yüzde 3 puana indirmişlerdir. Bununla birlikte, babaların eğitimindeki ilkokul kuklası dışında, diğer baba eğitim kuklaları kızların için olan kestiriminde anlamsızdır. Bununla birlikte, annelerin babalarının eğitim durumlarının annelerin eğitimi üzerindeki etkileri

konusunda güçlü kanıtlar vardır. Kızların 12. sınıf tamamlanma oranı ve annelerin lise bitirme oranları için, baba eğitimi değişkenleri kızların tahminleri için anlamlı değildir, ancak annelerin tahminlerinde anlamlıdır. Annelerin eğitim değişkenleri için, özellikle ilköğretim ve ortaöğretim okullarındaki kuklaların anlamı, 12. sınıftaki bitirme oranındaki önemini arttırmaktadır. Örneğin, ortaöğretim mezunu anneye sahip olmak, eğitimsiz anneye sahip kız çocuklarının 12. sınıfı tamamlama olasılığını yüzde 21 puan artırrıken, annelerin analizi için bu oran % 9'dur.

Annelerin eğitim değişkenleri için, özellikle ilköğretim ve ortaöğretim okullarındaki kuklaların anlamı, 12. sınıftaki bitirme oranında önem düzeylerini arttırmışlardır. Bu, sekiz senen üstü eğitimin artık zorunluluk değil bir seçim olması ile de açıklanabilir. Bu okul düzeyinde, anne-kız arasındaki etkileşim baba-kız etkileşiminden daha yüksektir çünkü kızlar genellikle anneleri tarafından motive edilmektedir. Genel olarak, Türkiye'de eğitimdeki eşitsizliğin birbirini izleyen iki kuşağa bakarak zamanla azaldığını gözlemleyebiliriz; Birincisi kızlar-anne-babalar, ikincisi anne-anneannne-dede. İlk kuşakta dedelerin eğitiminin annelerin ilk, orta ve lise bitirme oranları üzerindeki etkisi, anneannelerinkinden fazladır ve katsayılar istatistiksel olarak anlamlıdır. İkinci kuşakta, ebeveyn eğitim değişkenleri genel olarak 5., 8. ve 12. sınıf tamamlama oranlarını anlamda için açıklayıcı bir güce sahiptir. Özellikle, okul düzeyi yükseldikçe, annelerin eğitiminin kızların eğitim çıktılarına etkileri ikinci nesilde artmakta, bu da annelerin kızlar için rol modelleri olarak görülmesi şeklinde açıklanabilir. Birinci kuşakta, babaların eğitim değişkenlerinin okul tamamlama oranına etkileri her zaman annelerinkinden daha yüksek olmuştur. Bu, annelerin ailenin daha önceki zamanlarda genellikle pasif rollere sahip olması ve anneler ile kız çocukları arasındaki ilişki geleneksel bir şekle sokulmasıyla ilişkilendirilebilir. Zamanla, annelerin koruyucu ve motivasyon sağlayıcı olarak aile hayatındaki rolleri artmıştır.

Sonuçlar, kaçınılmaz olarak, hızla değişen bir dünyada eğitimin toplumda daha fazla önem kazandığından beklenmektedir. Eğitimli olmak genellikle çalışkan ve disiplinli

bir kişilik işareti olarak kabul edilir. Daha önce de açıklandığı gibi, yaşı daha büyük kız çocukları için, annelerin etkisi hala çok önemlidir, annelerle kız çocukları arasındaki bu ilişki özel dikkat gerektirir. Kızlar için, lise düzeyinde, tüm anneler eğitim durumları ne olursa olsun eğitim almalı ve kızlarına karşı dikkat etmelidirler. Türk toplumundaki kadınlar sosyal, iş ve aile hayatında hak ettiği konuma erişemedi. Bu sorunun üstesinden gelmenin tek yolu, yalnızca ebeveynleri eğitmek değil aynı zamanda çocuklarının gelişimi için yararlı olabilecek toplumsal gelişimlerini sürdürmektir. Bu spesifik politikalar mentorluk da içermelidir, zira anneler hanehalklarındaki istikrarın kaynağıdır, böylece gelecek nesiller üzerindeki olası olumsuz etki ortadan kaldırılabilir.

Bu çalışma, lise mezuniyet oranlarını ve geniş veri kümesine sahip olan erkek öğrencilerin gruplarını analiz ederek de geliştirilebilir. Analizde örneklem sayısının artırılması ve baba-erkek boyutunun eklenmesi, sonuçların Türkiye'nin eğitim yapısını anlamada daha ilginç sonuçlar verecektir.

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